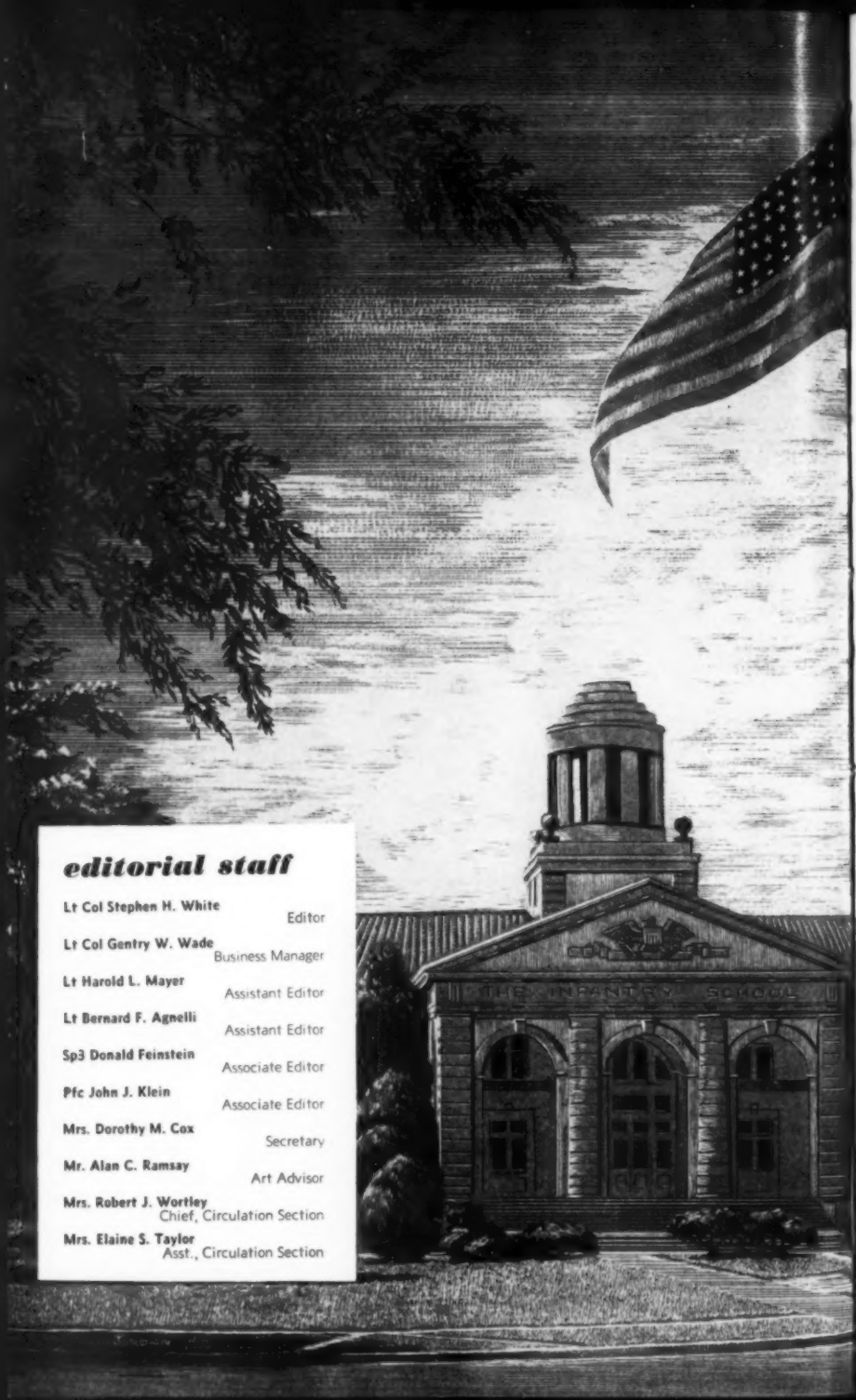
Infantry

SCHOOL QUARTERLY

APRIL 1956

the magazine for infantrymen



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THE
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SCHOOL QUARTERLY

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articles

6 **Shooting in the Dark**

18 **Today's Experience — Tomorrow's Victory** by Lt Howard M. Steele, Jr.

23 **Two-Man Punch** by Capt Lawrence H. Bulawsky

26 **Checklists for Infantry Leaders**

33 **Ranger-Type Training for Infantry Units** by Maj Gen A. D. Mead

37 **Know Thyself** by Capt Boyd T. Bashore

42 **Powders and Primers** by Capt Arthur R. Underwood

49 **Where Are Your Leaders?** by Capt William F. Strobridge

52 **Firepower and Speed Will Beat the Odds** by Maj Roderick A. Stamey, Jr.

62 **Reconnaissance and Security Within the Battalion** by Capt Donald F. Bletz

78 **Snakepots to Baseballs** by Lt Wilman D. Barnes

88 **The Long Thin Line** by Lt Col Samuel H. Hays

97 **Firecracker Board** by Capt Barney K. Neal, Jr.

features

2 **Letters to the Editor**

4 **Editor's Page**

60 **Quiz**

68 **Answers to the Quiz**

70 **How Would You Do It?** by Capt Sherman F. Carter

101 **What's New?**

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letters . . . TO THE EDITOR

Thank You Sir!

Camp Chaffee, Ark.

Sir:

. . . As commanding officer of a basic training regiment, I find the *Quarterly* is not only interesting but of extreme value to me in accomplishing my mission. We have adapted many of the ideas proposed by your authors in an effort to improve the quality of training of basic soldiers under ATP 21-114. Other articles, suggestions and ideas, while not applying to basic training, are invaluable to me and my officers in helping us keep abreast of the changes, actual or proposed, on higher level.

I highly recommend the *Quarterly* to officers of all branches.

Robert H. Dawson
Col, Arty

We appreciate Col Dawson's recommendation. We try to include in each issue of the *Quarterly* articles of value to everyone from squad leader to regimental commander. In line with this policy, readers' ideas for articles are always welcome.—Editor.

Valuable Link

Hokkaido, Japan

Sir:

I am quite ashamed to find that your questionnaire has laid in my file for almost a year. . . .

I don't think anyone wants a steady diet of one particular type article or specific subject. A variety of things that wake up our present Infantry is more appreciated. As for myself, I find that I tend to fall behind in the new weapons and the techniques of operation and employment. As any army aviator, not serving with Infantry, the *Quarterly* is my most valuable link in remaining current with my branch.

Lawrence M. Flanagan
Capt, Infantry

All questionnaires returned by our readers receive careful study. This is our best method of determining what will help our readers most. We try to include current Infantry news in each issue so that all Infantrymen may remain abreast of developments in every aspect of their branch.—Editor.

More Issues

Monterey, Calif.

Sir:

I have been a subscriber to *The Infantry School Quarterly* since 1947 and would like to state that the progressive and forward thinking of all members of the staff of the *Quarterly* has resulted in a continually improved magazine for Infantrymen. But, I have a question: Why doesn't the *Quarterly* come out more often than four times a year? If it can't be printed every month, why not every two months? I am certain that every time your magazine goes to press, many worthwhile and interesting articles have to be cut or passed over due to limitations of space.

Although the *"Quarterly"* portion of your title would have to be changed, hundreds of your faithful subscribers would rejoice with me in seeing more of your informative, hard-hitting, factual information.

A. E. Bauman
Lt, Infantry

We have studied the question of publishing the *Quarterly* more frequently and will continue to give consideration to this possibility. The financing of additional issues, however, would be a major problem. The *Quarterly* is an official, nonprofit publication, partially financed by nonappropriated funds. We are not permitted to carry advertisements to help defray costs. Increasing the number of issues might be possible by reducing the number of pages in each issue or by increasing subscription rates. We hesitate to do either. Furthermore, since changes in Infantry doctrine, organization and techniques are relatively slow developments, increasing the number of issues would not speed up the process of bringing this information to the readers to any great extent. For the time being at least, the *Quarterly* must remain a quarterly but we appreciate Lt Bauman's interest and suggestion.—Editor

Help Wanted

Heavy Mortar Company
75th Inf Regiment
Fort Buckner, Calif.

Sir:

For the first time in my career I find myself assigned to a heavy mortar company and am sorely in need of assistance. Remembering only slightly all the information I learned in OCS, I am confronted with the problem of "boning up" quickly and thoroughly. I believe that there are articles in past issues of *The Infantry School Quarterly* that will assist me and the company. May I therefore request a list of articles concerning the heavy mortar company and/or the 4.2-inch mortar so that I may order copies. . . .

Jerry L. Weikert
Lt, Infantry
Gunnery Officer

We've included a list of articles which should help Lt Weikert in his new assignment:

Heavy Mortar Digs In—January 1952

A Sergeant Reports—April 1953

Sunday Punch—January 1954

Sighting Made Simple—April 1955

Heavy Mortar—Parade of Progress—October 1955.

—Editor.

Request Granted

Headquarters 60th Infantry
APO 176

Sir:

I have read with interest the article entitled, "Keep 'Em Rolling!" by Col Robert E. Holman in the April 1955 issue of the *Quarterly*.

I feel that this article should be in the hands of every commander down to company level and therefore request permission to reproduce it for the benefit of this regiment. . . .

W. B. Kunzig
Col, Infantry
Commanding

We've already told Col Kunzig that we're happy to have his regiment reproduce Col Holman's article. Unless otherwise indicated, material appearing in *The Infantry School Quarterly* may be reprinted, provided credit is given to the author and to the *Quarterly*.—Editor.

Editor's Page

Dear Reader:

The rapid development of nuclear weapons and the possibility of their use in a future war—which could be thrust upon us at any time—require changes in our national defense forces.

Our army must have the capabilities of dispersion and mobility that would be required in nuclear warfare. It also must be able to fight and win a war with conventional weapons.

The best minds in our country, both military and civilian, are working on this problem. They are studying our requirements from the highest level down to the individual soldier. They are developing new concepts.

These concepts are being tested in exercises like Sagebrush, Moosehead and Lodestar. When the results of such tests have been evaluated and accepted we can expect new Infantry doctrine, new organization and new techniques.

Each new development will be important to you, the individual Infantryman. It also will be important that you get it quickly. Considerable time is required to get new doctrine and techniques into field manuals and other publications. The Quarterly will bring this information to you, quicker—as it is developed. Look for it!

THE EDITOR

Exercise Sagebrush tested many ways of increasing mobility. Here an airlifted antitank squad is reunited with its weapon. Lowering the jeep-mounted 106mm recoilless rifle is one of the army's new H34 helicopters.

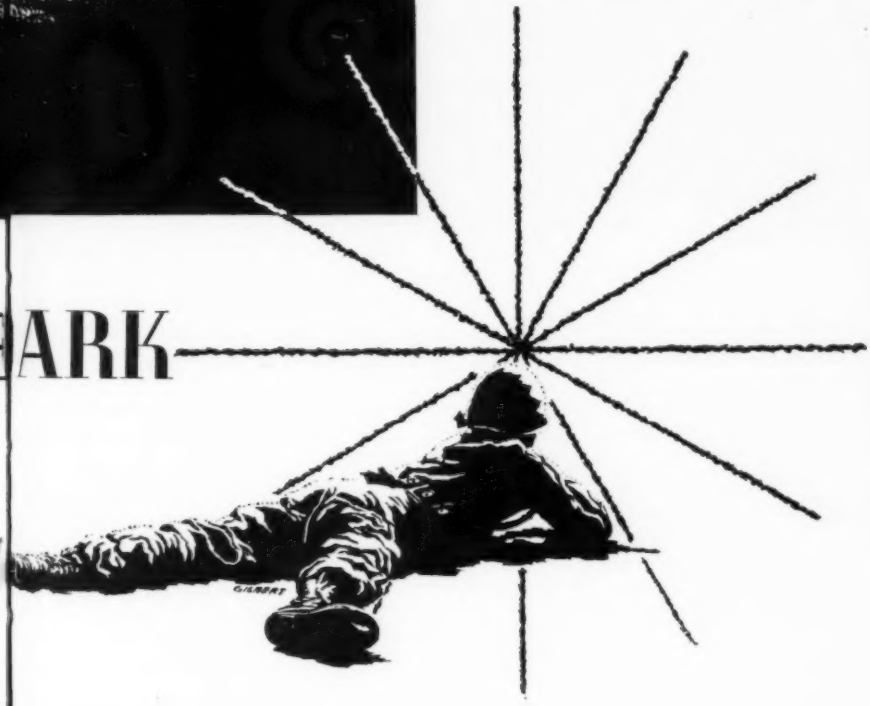
SHOOTING IN THE A

Our riflemen must be trained to shoot effectively at night using only their own two eyes - and our squad leaders must be able to control that fire. Here is how it can be done.

IEARK

THINK OF yourself as a squad leader. Your squad is in a defensive position. It is night and you are expecting to be attacked any minute. You secured your position just before dark, with only a short time for daylight observation. You can see very little of your squad sector and you know it is going to be hard for you and your men to detect the enemy in any part of the sector. You can't even see all of your men in their covered and concealed positions. You wonder uneasily just how well you will be able to control the squad's fire.

You think to yourself, "How will the squad know when to open fire? Will I, or one of my men, see the enemy first? If I see him first, how can I let all my men know? If one of the squad members sees him first,



must

how will he get the word to me? It is too dark to use arm and hand signals. Can my men hear me if I use voice commands? How can I distribute, concentrate and shift the squad fires—and get the men to cease fire? How can I be sure they conserve ammunition? I know how to do all these things in the daytime. But tonight? In the dark?"

These questions indicate what a tough job the squad leader and all of his riflemen face in night warfare. Many of their daytime techniques for effective fire and control are worthless on a dark night. Their problems can be solved only with sound techniques.

Before we discuss squad techniques, we must first take a look at the way a rifleman aims at night. It is a far cry from the daytime method. Almost everyone can see a little, even on the darkest night, but not through a peep or any similar sight. In darkness, the peep looks solid and the post can't be seen at all. If you doubt this, try it yourself.

Since the rifleman cannot use his sights, a new technique had to be developed for aiming at night. It is called the pointing technique and it can be used in the prone, kneeling, sitting or standing positions. How this works can be seen from a description of the prone position.

Assume the prone position, holding the rifle as usual, left elbow well under the weapon and the butt firm against the shoulder. Modify the rest of the position like this: keep your head high so your eyes are well above the rear sight. Hold your head centered above the comb of the stock. Keep both eyes open.

Aline on the target by pointing your rifle at it. When you feel you are alined on it, lower the muzzle *more* than you think is necessary to hit the target. You do this because, with the head and eyes held high, you have a natural tendency to hold the muzzle up to your line of sight. This makes you fire over the target.

Next, if you are a right-handed firer, aim slightly to the right of the target and fire. (A left-handed firer would aim slightly to the left.) You must use this holdoff because tests have shown that right-handed firers aim a little too far to the left when using this technique, while left-handed firers aim a little too far in the opposite direction. Upon completion of individual night firing instruction, you will know your own holdoff.

There are four things the squad in defense must do, day or night:

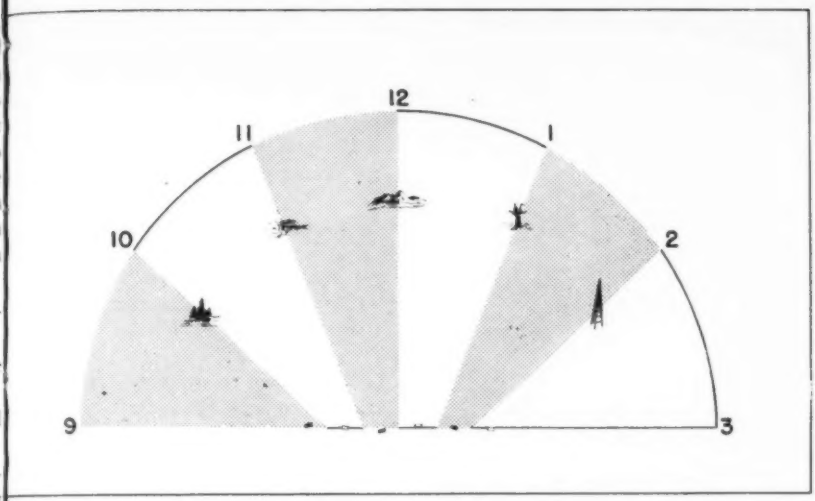
1. Maintain surveillance of the entire squad sector.
2. Allocate targets to the riflemen and automatic riflemen.
3. Control its fires effectively: opening, distributing, concentrating, shifting and ceasing fire.
4. Conserve ammunition.

The squad leader cannot directly control these things in the dark. The individual squad members must take over much of the responsibility. They can do this with good success if they have SOP's to follow. Consider surveillance of the squad sector at night, for example.

In combat, the squad frequently must cover a 360° sector to provide for all-around defense. This may be more essential at night than during daylight. The very minimum the squad must cover at night is 180°, including the flanks. The flanks must always be watched because the enemy can move into them easier under the concealment of darkness than during daylight. Let's consider how we would maintain surveillance taking a 180° front first, then a 360° front. When you understand how it is done, you will see how easy it is to set up SOP's that can be followed with a little practice.

Sectors on a 180° Front

With a 180° front, the assistant squad leader and each of the five riflemen must



Clock system sectors of fire.

over at least a 30° sector to get complete search and fire distribution. It is always best to assign individual sectors during daylight. When this is not possible, they can be assigned by the clock system. The hours on the clock form 30° sectors. With the center of the squad considered as the center of the clock, 12 o'clock is the direct front, 9 o'clock is the left flank and 3 o'clock is the right flank. The hours from 9 o'clock to 3 o'clock contain six 30° sectors, which are always assigned to the five riflemen and the assistant squad leader as shown in sketch above. (The automatic riflemen search the entire 180° squad sector.) Each rifleman must know his position in relation to the others so he will know for which sector he is responsible. Each man also must know where the squad front is; that is, in what direction the squad is defending, so he can estimate approximately where 12 o'clock is. A prominent terrain feature silhouetted against the skyline often can be used as 12 o'clock.

It is conceivable that after an assault, due to casualties and the confusion of combat, a man who starts out on the squad left flank may end up on the right flank. As long as he knows he is on the right flank and knows the general direction of the squad front, he knows he is responsible for searching from 2 to 3 o'clock.

Assigning 30° sectors of responsibility is useful in training to get across the basic idea of complete surveillance of the squad sector. In combat, the terrain, the disposition and size of the squad, the mission and many other factors will require some change in each man's sector. Sometimes one man may have to cover a sector much larger than 30°.

Sectors on a 360° Front

For all-around surveillance, the squad must search a 360° sector. To do this, the clock is divided into quarters: 9 to 12, 12 to 3, 3 to 6 and 6 to 9 o'clock. Two men are assigned to each quarter. They can operate from two-man foxholes, with one man searching while the other rests.

The squad leader changes sectors when necessary.

Sector System As SOP

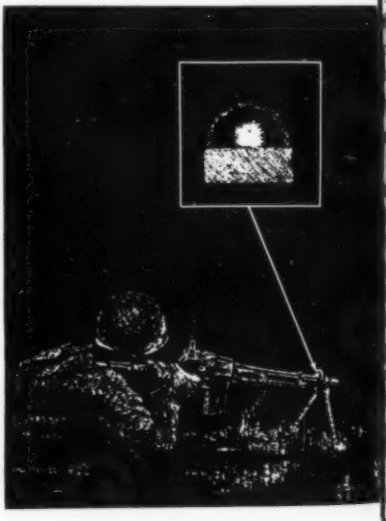
The assignment of night sectors should be SOP. That is, each man should have the same sector of search every time the squad takes up a defensive position at night. The squad leader cannot always point out individual sectors every time the squad moves. Each man should know what part of the squad front he is responsible for and assume the responsibility for it automatically.

Every man must take this responsibility seriously because each squad member has to depend on the others to protect their own sectors of search. If any one of them goes to sleep on the job, none of the other men can see into his sector well enough to warn him when something is stirring.

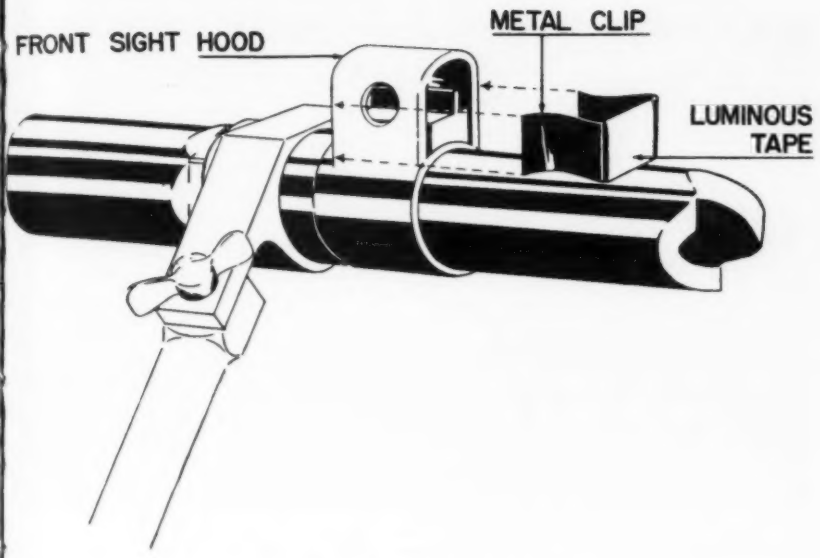
You can stake out your sector if you have a chance to look it over by daylight but this is not an absolute necessity. As you become more familiar with night fighting through training, you will find it easier to orient yourself in the dark, to apply the sector system and to modify it for any situation.

Don't get the idea that the squad leader has nothing to do or that there is nothing he *can* do about control. He can't just permit the riflemen to hit the dirt, cover a certain sector and let it go at that. He checks each man as soon as possible, tells him how the squad is deployed on that particular piece of ground and the location of the other men on his right and left, whether they are a little farther forward or a little to the rear. He changes sectors when necessary to tie them together to assure an overlap. There must be no gaps. Based on his ability and experience he does all he can to tighten up the defense. But, until he can get around, the riflemen do not wait for instructions. As soon as they take up their positions they start searching their sectors.

When the leader hears firing from one of his squad sectors, he makes his way there as quickly as possible to get a line on the situation. He finds out whether his



AR men can fire at flashes.



Luminous tape is used on the hood of the BAR.

man fired at a shadow or an enemy. If he sees an enemy or two, he tries to figure whether they are trying to draw out a revealing fire or whether they are the first signs of a real attack. He then makes the rounds of his other men, when possible, to reassure or alert them.

Targets For Riflemen and Automatic Riflemen

The only practical night target for a rifleman is an enemy foot soldier whom he can see. Enemy automatic weapons (flashing targets) are just as dangerous to the frontline Infantryman as enemy foot soldiers moving toward his position but they must be left to the automatic riflemen. The squad leader may designate certain riflemen to fire on flashing targets *only* when both AR's are not working *and* the riflemen can see no enemy foot soldiers to shoot at.

There is a good reason for leaving flashing targets to the AR's. Although the automatic riflemen have to use the pointing technique to fire on enemy riflemen, they can use daytime sighting and aiming to fire on flashing targets. To make daytime aiming possible, the AR men stick a piece of luminous or white adhesive tape (fixed to a metal clip) on the front hood of their weapon. The top edge of the tape must be even with the top of the sight blade. They can then pick up the flashes in their peep and aline so that the flashes are just on top of and centered on the tape. The bipod lets them hold the weapon steady enough to hold a sight picture fairly well while firing.

Fire Control

Squad fire in night fighting is controlled for the most part by the squad members. They open, distribute, concentrate, shift and cease fire by following SOP's. The SOP's for fire control follow naturally from the SOP for sectors of search and from the statement we have just made: riflemen fire only at the enemy they can see and automatic rifle-

men fire at flashing targets and the enemy they can see.

It is logical for the squad members to have most of the responsibility for controlling their own fire. The squad leader will rarely, if ever, have the time or the information to give a fire command. The enemy is generally close in when he is detected, seldom more than 75 yards away. This means that the range and target description elements of a fire command are not needed. The squad leader cannot give the direction to the target or say who is to fire or when. The only man who knows these things is the man in whose sector the target appears. Even if the squad leader is the first to detect a target, he is limited in communicating this information. Anyway, if the men can't see what the squad leader sees, his signals would mean nothing. How, then, does the squad open fire? Simply by following this SOP:

Riflemen open fire when they see enemy personnel in their own sector but do not fire at random noises or at automatic weapons unless they can see the gunner. AR men open fire on automatic weapons as soon as they see the flashes within range anywhere in the squad sector.

What about fire distribution? The SOP for opening fire takes care of that automatically. As the enemy appears in each man's sector, that man opens fire. If the enemy happens to be distributed evenly across the squad front, the fires of the squad will also be distributed evenly.

How does the squad concentrate its fire? If the enemy is concentrated in one or two sectors, it is the riflemen in those sectors who know it first. To notify the rest of the squad, they need some sort of signal. The best signal is the sound of their rifle fire. This alerts the other men and any of them who do not have targets in their own sector turn their attention to the sound of the firing. If they can see the enemy in the other sector, they fire. This gives us another SOP:

Fire in other sectors if you can see the target.

Next, the squad needs to know how to shift fires. The enemy situation changes continually. A concentration in one sector can quickly turn into a distributed target or a concentration in a different sector. To release a concentration of fire built up by the last SOP and to get good distribution at any time the squad follows a third SOP:

Fire no more than 3 rounds into another man's sector without searching your own sector again.

Every member of the squad must keep in mind that his own sector is his main responsibility. But if he finds no target there after firing 3 rounds at a concentration in another sector, he is free to shift his fire to any other sector where he hears firing—if he can see a target.

The final element of fire control is ceasing fire. Our first fire-control SOP states that each man fires when he sees a target. This implies that he stops firing when he no longer sees a target. This is correct—but rather than rely on what is implied, we state it as a fourth SOP:

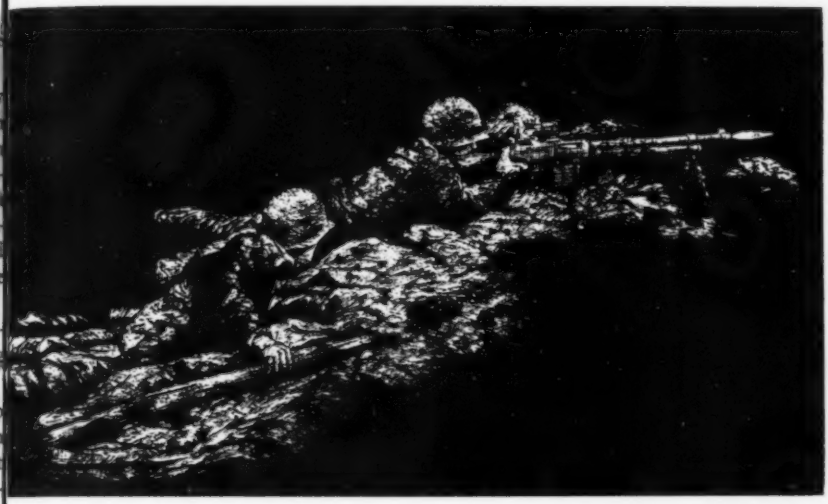
When you no longer see a target, cease firing.

Ammunition Conservation

The squad must conserve its ammunition when fighting in the dark. This is automatically assured by following the fire-control SOP's to the letter. Note that every one of the SOP's states clearly or implies strongly that members of the squad fire only at targets they can see. So, if the riflemen fire at targets they see and stop firing when targets are no longer visible, they cannot possibly waste ammunition.

The Squad Leader

You have noted, of course, that squad members carry out all the SOP's without orders from the squad leader and with



The squad leader supervises the action, usually going to the most dangerous sector.

out his direct control. However, the squad leader is by no means idle during the fight. He must monitor the use of the SOP's at all times. He moves to the most dangerous sector to personally supervise the action. The SOP's are helpful in getting the squad's job done effectively but they can't fit every situation. It is here that the squad leader, with his experience, ability and coolness under fire, must exert his leadership to the utmost.

Now let us see how the squad trains for defensive night firing.

Minimum training requires 3 hours of orientation firing on the first night; 6 hours of daytime corrective firing the following day; and 3 hours of application night firing the second night. There should be less than a half-moon both nights.

The range should be on a fairly level piece of terrain. It should be about 100 yards square and allow 180° firing with safety limits for rifle fire.

Orientation Firing

This phase of defensive night firing shows the squad what cannot be done at night. It makes the members see for themselves that:

1. The squad leader cannot adequately observe the terrain, the enemy or his own men.

2. The riflemen should not fire at noises nor at automatic weapons unless they can see the gunner.

3. Daytime procedures for distributing and concentrating fires cannot be used during darkness.

Before starting the exercise, the instructor tells the squad that it is going to fire in a simulated combat situation. He allows squad leaders to brief the squads on anything they want to, then moves the first squad to the firing line. There, he instructs the men on safety precautions, gives each rifleman a clip of ball ammunition and each automatic rifleman a magazine of ball ammunition.

He returns the squad to the squad leader's control and starts the exercise.

The object is to make this exercise as realistic as possible, to create some of the tenseness and confusion of real combat. This is done by producing the following sequence of events:

After a short period of silence, detonate four demolition charges, separately, in front of the squad. (It takes considerable time to put in the charges for each squad; grenades, firecrackers or simulators may be used.)

After these explosions, give the squad another period of silence. Then play a recording of a bugle, drum or other noise-making device characteristic of an aggressor. Play it for 30 seconds and follow it with a short silence.

Next, play a recording of machinegun fire for 15 seconds, without flashing targets and continue it for 45 seconds more, making the flashing targets flicker to coincide with the sound.

Follow the machinegun fire closely with various combinations of pop-up targets representing enemy soldiers close to the position. Here is a suggested order and timing for the pop-up targets:

Time in seconds	*Targets*	*Direction*
00	1-2-3	Up
10	10-16	Up
15	18-19-20	Up
16	1-2-3	Down
25	10-16	Down
30	18-19-20	Down

After the last target goes down, the instructor commands cease fire. He has all weapons cleared, ammunition collected and counted and the targets scored. He has each squad keep its scores in numbers of hits, number of rounds fired and percentage of hits, so they can be compared with the application-firing scores the next night.

What To Expect From Orientation Firing

When a squad goes into orientation firing with no coaching and no hint as to fire control, it has a hard time operating as a smooth team. The men will start firing as soon as they hear the noise-making devices or the machineguns. In fact, they will fire most of their ammunition before the pop-up targets begin to appear. Since the riflemen know little about their sectors of search, some of them will not even notice the pop-up targets on their flanks.

The squad leader will feel very helpless and uncertain when his men open fire. He won't be able to decide whether to try to stop the firing or let it go on. In most cases, he will do nothing because he has no idea how to control the fire.

Critiquing The Squad

As soon as the men have finished firing, the instructor should talk over with them the difficulties they came up against and could not solve with daytime procedures. He leads the discussion along the lines explained in the paragraphs on sectors of search and fire control. He brings out the need for each SOP in its logical sequence, states the SOP clearly and simply, then explains how it solves at least one of the problems the men encountered.

Daytime Corrective Firing

This instruction is given the day after orientation firing. It is given during daylight so the instructor and squad leaders can see and correct mistakes.

The instructor starts the instruction with a review of the SOP's he explained the night before. This repetition is very useful.

The AR men put a 100-yard battle-sight setting on their weapons and zero them for deflection. The instructor ex-

lains briefly the technique for engaging lashing targets, then has the AR men ry fire, using visible objects to represent e flashes they would see at night.

The instructor then places the squad n position and gives each rifleman one lip and each AR man one magazine of all ammunition.

The squad leader takes over control f his squad and shows each man his ector of responsibility. Then the prob-em begins. It is run just like orientation iring except that targets are arranged to op up in different combinations.

Each squad should have at least four ry runs and three wet runs on this roblem, with different combinations of op-up targets on each run. (The demo-itions and other sound effects are used nly for the first run.) The instructor nd squad leader critique each run, point-ng out mistakes and correcting them. he men usually start out slowly and ave to be reminded many times of the OP's but their actions become auto-natic after a number of runs.

Night Application Firing

This instruction gives the men more ealistic practice in applying the SOP's nd builds up their confidence. The in-tructor starts it with another review of he SOP's. He lets the AR men practice ry firing at the flashing targets and fol-ows it with a wet run of one magazine, coring the targets for information.

After these preliminaries, each squad oes through the orientation firing course, sing different combinations of targets ut the same sequence and time intervals.

The instructor critiques each squad nd compares their scores with the ones ade in orientation firing.

Proficiency Course

After completing the three phases of ight firing instruction, each squad hould fire a proficiency course to give the men additional realistic training and test their proficiency as a night combat unit.

The range for this course consists of a firing line containing squad foxholes with ten demolition pits forward of the squad position and two to the rear. Figure 1, on page 16, shows the entire setup clearly.

The instructor briefs the squad before it starts firing the course. He tells the men that they are in a defensive position, that they have already repelled a night attack but that they can expect more attacks before daylight. He allows the squad leader to brief his squad, then moves it into position and briefs the men on safety precautions. He gives each rifleman four clips of ball ammunition and each AR man three magazines of ball ammunition.

The problem develops in the following sequence:

1. After a brief silence, flute and drum music is played over the loudspeaker for 30 seconds.

2. Demolitions are exploded sporadically for one minute to simulate enemy mortar and artillery fire.

3. After a brief silence, two flashing targets at a range of 200 yards, synchronized with a recording of machinegun fire, are presented for one minute.

4. Five flashing targets at a range of 75 yards, synchronized with a recording of machinegun fire, are presented for 1½ minutes.

5. A recording of a voice shouting commands in a foreign language and insults in broken English is played for 15 seconds.

6. The three banks of pop-up targets to the squad's right front are presented by having the farther banks exposed for 15 seconds, then lowered. After a 10-second pause the center bank is exposed for 15 seconds, then lowered; after a 10-second pause the near bank is exposed for 15 seconds, then lowered. This simu-

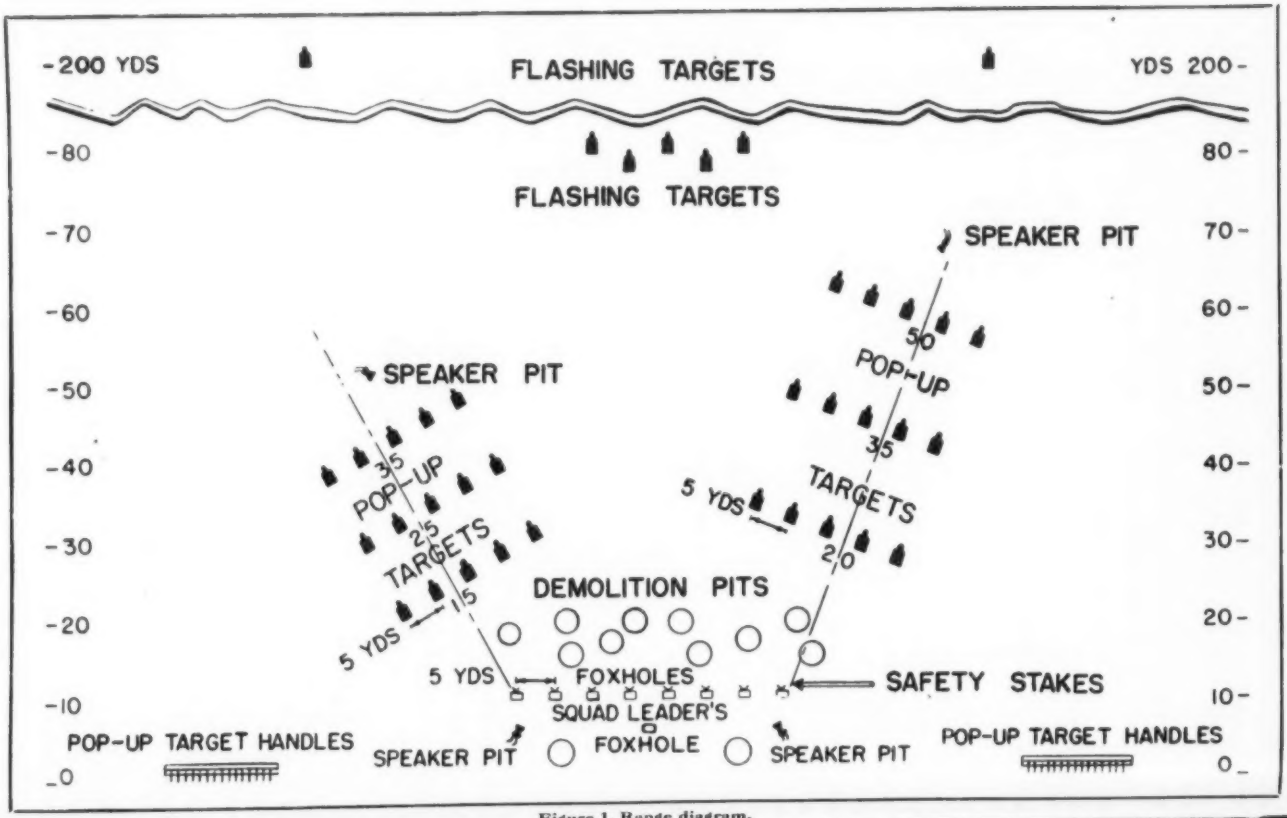


Figure 1. Range diagram.

lates enemy rushing in to close with the squad.

7. After a brief pause the three banks of pop-up targets to the left front of the squad are exposed in the same manner.

The instructor then commands cease fire, has all weapons cleared, ammunition collected and targets scored. Finally, he critiques the squad.

Scoring the Proficiency Course

At this time there has not been sufficient testing with night firing to establish a minimum passing score for this course. This must be left to major unit commanders. To help commanders arrive at a reasonable scoring system (and to show how effective night training is) the results of tests conducted thus far are given below. The results were derived by averaging the percentage of improvement of several experimental squads and by pitting trained squads against untrained ones.

The experimental squads, going through orientation firing cold, averaged 2 hits out of a total of 80 rounds. In other words, they had to fire 40 rounds to get 1 hit. This is 2.5 percent hits. In application firing, these squads averaged 20 hits out of 65 rounds—or 2½ hits out of every 8 rounds. This amounts to 31 percent hits and represents a 1150 percent improvement over their orientation firing score. This is a remarkable improvement but some of it was due to the fact that they fired on the same range with the same combination of targets and under the same general conditions both nights.

After 12 hours of training, the experimental squads fired the proficiency course. Their scores were compared with those of other squads that fired the same course after going through individual night firing only. In the trained squads, only the AR men fired at flashing targets, averaging 17 hits a squad. In the untrained squad, both AR men and riflemen fired at the flashing targets. Their combined fire averaged 11 hits a squad. This is a 55 percent edge in favor of the trained squads.

The trained squads averaged 11 hits on the pop-up targets while the untrained squads got 1 hit. This is a 1000 percent edge for the trained squads.

Here is a comparison of the over-all performance on all targets:

	Rounds fired	*No. of hits*	*% of hits*
Untrained squads	306	12	4
Trained squads	224	29	13

One lesson we learned in Korea was a need for improvement in our ability to shoot in the dark. We cannot rely entirely on artificial moonlight, infrared or other devices. Every rifleman must be trained to fire his weapon at night without any special equipment.

THE MATERIAL in this article has been extracted from two chapters of a publication now being prepared by the Weapons Department of The Infantry School. It is published in this form to give Quarterly readers advance information on important new techniques for firing the rifle at night.

Combat in World War II and Korea exposed weaknesses in our ability to fight at night. Among these was the inability to shoot the rifle effectively in the dark. As a result, considerable research and testing have gone into the improvement of our night firing. When published later this year, the complete text of "Shooting in the Dark," will become an important aid to this phase of training. Announcement will be made in a future issue of the Quarterly when the new publication may be expected. Look for it!

Figure 1. Range diagram.

Today's Experience

Tomorrow's Victory

Let's give our officers more troop leading experience.

Unexpected machinegun fire ripped the air. The platoon's attack was stalled. The men took cover and watched for the platoon leader's signal. Suddenly, to their amazement, the lieutenant stood up in full view of the enemy. Gesturing wildly, he tried to lead the platoon in a rush against the position.

He never made it.

A well-aimed shot dropped him before he had gone five feet. And his life's blood trickled away as his men looked on.

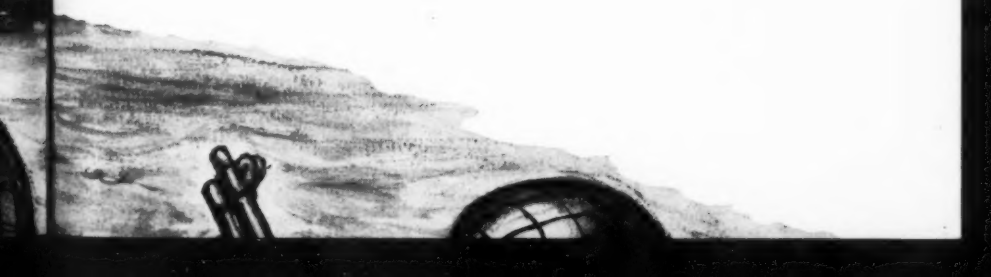
The lieutenant was not heroic. He was inexperienced. He might have survived this encounter and, more important, his platoon might have accomplished its mission had he realized that the terrain was ideal for using fire and maneuver to knock out the enemy position.

Maybe it wasn't entirely his fault. As a post motor officer on garrison duty in California he didn't receive tactical training with troops. He arrived in Korea without a full understanding of elementary tactics and troop leading. True, he had been taught these things in his basic course. He probably would have remembered them if he had had more practical experience as a leader. But no field-exercise umpire had ever declared him a casualty, no experienced company commander had reminded him that he was overlooking the importance of fire and maneuver.

It is not impossible to learn the fundamentals of troop leading in combat—if you live long enough. Many officers acquired this knowledge in World War II and Korea but often at the expense of themselves or their men. Experience is never sold at bargain prices in combat. If we are to reduce the number of such tragedies in future wars, we must include troop duty as a required part of each officer's training.

In the past, troop duty frequently has been a paper policy overlooked at the practical level. In 1952, for instance, the army required that each newly commissioned officer, after completing his basic course, serve a minimum of three months'

By Lt Howard M. Steele, Jr.



troop duty.[1] Often, however, this requirement was not fulfilled by training in a command position. For example, one lieutenant served his three months as a member of a leadership committee. Other officers reported that their "troop duty" ranged from serving as a member of a "sighting and aiming committee" to acting as special services officer. Certainly none of these assignments provided the background necessary to lead troops in combat.

The army did take a step in the right direction in 1952 when it sent a limited number of newly commissioned officers to FECOM to receive three months' training with a tactical unit before assignment in Korea.[2] These officers learned one specific job—how to lead troops. Unfortunately, this training was short and included only a small percentage of the officers commissioned.

Newly commissioned officers are not the only ones with insufficient troop-leading experience. For example, a major who served in World War II as a recruiting officer and then as a staff member in a division G1 Section was recalled in 1951 and assigned as a battalion executive officer in Korea—a key position which demands troop leading experience. A short time later, his battalion commander became a casualty. The major replaced him, only to be relieved 22 days later. His inexperience in troop leading had cost the unit unnecessary casualties.

Atomic warfare will inflict heavy casualties; capable replacements will be needed. Such a war may play strange tricks. Individuals who never dreamed of being platoon leaders may find themselves leading a company into action. The army's chain of command will have to be like a magician's deck of cards—easily shuffled and all aces. This versatility can be achieved through tactical training before combat.

Tomorrow's tactics will stress greater mobility and dispersion of units than in the past. Rear echelon units will not be able to rely as heavily on the combat arms as in the past but must be able to defend themselves. Any army officer, regardless of branch, may be faced with a situation where he must lead men in combat. To do this successfully he must have training and should have some combat-arm troop leading experience. Technical service branches, I am sure, recognize this and appreciate the need for greater emphasis on troop leading.

How can we be sure our leaders have adequate troop leading experience? Here are some suggestions that may help to solve this problem:

First, and foremost, we should establish a firm policy that no officer of a com-

[1]SR 600–175, sec 3, par 17g (1952)—Preparation of individual replacements for overseas movements; a second lieutenant must serve a minimum of three months in an appropriate TO&E or TD position. (This paragraph was superseded in January 1954 and the new regulation (5 March 1954) does not contain any troop duty requirement prior to shipment overseas.)

[2]SR 600–175, sub par, sec 3—a limited number of second lieutenants who have not had unit training in the continental United States may be sent to FECOM if otherwise POR qualified. These officers will receive three months of unit training prior to becoming eligible for assignment in Korea. (Superseded in 1954.)

bat arm will be assigned to a command position in combat or in an area where combat is imminent without at least six months of prior troop leading experience in a command assignment. Preferably, this experience should have been fairly recent and with a unit suitable to the officer's present rank. Exceptions to these latter, desirable conditions should be made only when critical circumstances make them necessary.

A study should be made and a program adopted to insure that an absolute maximum of our officers in the combat arms receive troop leading experience. There will be difficulties connected with the drawing up of such a program, especially in peacetime. As the army shrinks in size, there will be an increasing shortage of command billets. There will be more officers than units for them to command. This situation might be eased by reducing the amount of time an officer serves in a command position. This, of course, would present additional problems. There would be some harassment of troop units and possible loss in effectiveness from a constant shifting of commanders. If not properly planned there would be increased changes of station, with resultant financial burdens for the army and for the officer. Careful analysis, however, would dictate where the line should be drawn to achieve the necessary goal of giving more officers more troop leading experience.

Perhaps more can be done to increase the number of combat-arms units within the over-all authorized army strength by further reductions in nonessential overhead personnel. Every unit obtained in this manner would provide command billets for additional officers.

The program should also include opportunities for troop leading experience for officers of other than the combat branches. Current regulations (SR 605-145-30) require newly commissioned regular-army officers in the technical services to serve a two-year tour in one of the combat arms. Some troop leading experience should be included during this tour. Newly commissioned reserve officers in the technical services who remain on extended active duty should also receive some training with a combat arm before attending a specialized branch school.

The career management branches should be required to screen the records of all officers on active duty who have not had a command assignment or a recent command assignment. These officers should be given priority for troop duty the next time they come up for reassignment.

It might be helpful to look at a program that was instituted by Army Forces Far East in 1951.

Approximately five percent of the lieutenants transferred to the Far East had

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to receive 90 days' training before being eligible for assignment. They took this training with an appropriate company-size TO&E or TD unit. Second lieutenants of infantry, artillery, armor and engineers were assigned to letter companies or batteries. None was assigned to a unit larger than a company or to a station complement before completing 90 days of unit training.

These officers received on-the-job field training, with special emphasis on the development of leadership qualification. All lieutenants commanded platoons. They had none of the extra duties which so often take a leader away from his unit, such as serving as an umpire, range officer or as a member of a court martial.

At the discretion of the unit commander, individual officers were reassigned from one company to another within the same unit, provided the continuity of training was not interrupted nor progress of training adversely affected.

Major commanders were responsible for exercising the necessary supervision to insure that the training was effectively administered and completed during the 90-day period. In this connection, the following applied: Ordinary leaves of absence were not granted during the training period; cumulative periods of absence from training in excess of 10 days due to illness, injury, emergency leaves, etc., were not counted as training time; deficiencies or weaknesses shown by individual officers undergoing the training were promptly brought to their attention by the appropriate commander; and the proficiency of each officer was reviewed with him by his organizational commander at least once each 30 days until his training was satisfactorily completed.

A wider application of such a program would be one step in the right direction.

Our country must have a corps of officers well grounded in troop leading regardless of their present MOS, so that if necessary they will be able to perform creditably in any situation which a new war may thrust upon them.

Great armies of history—the hordes of Genghis Khan, the legions of Rome, the dragoons of Napoleon—all have written one fact on the pages of history: Victories are largely a result of previous experience. Our success in a future war can be achieved by the training experience we furnish our leaders today.

CUT AND TRIM

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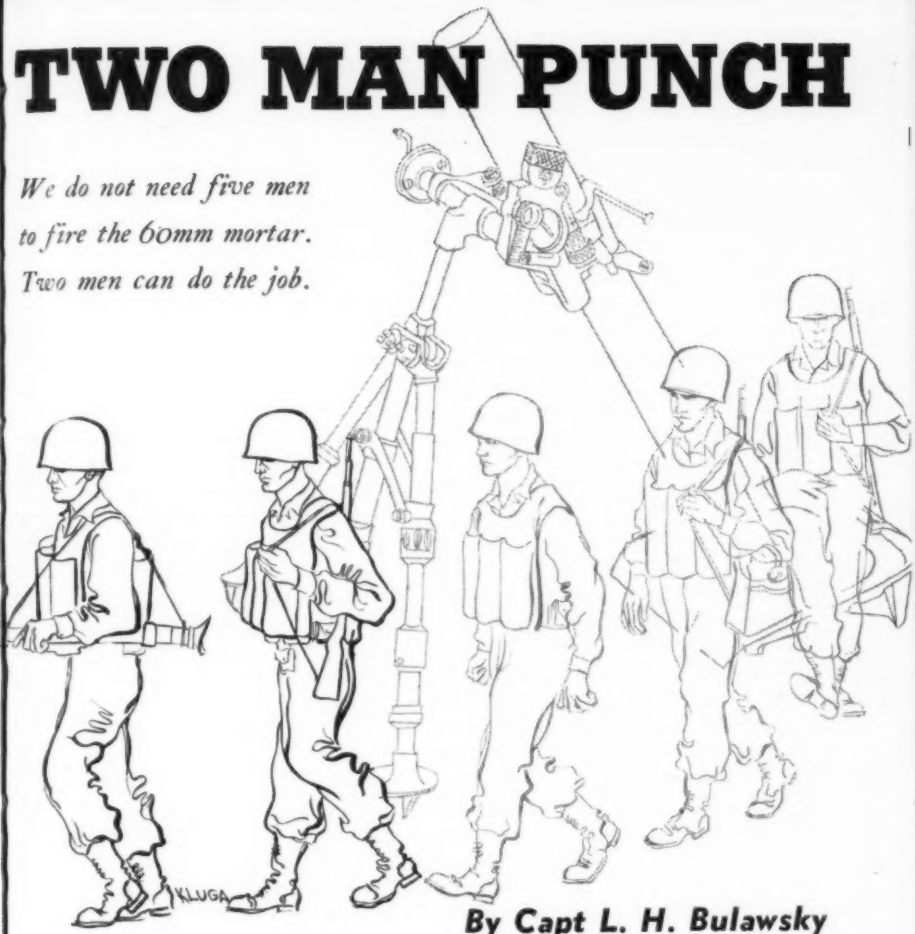
TWO MAN PUNCH

We do not need five men to fire the 60mm mortar. Two men can do the job.



By Capt L. H. Bulawsky

Two years ago, in his student monograph for the Advanced Course, The Infantry School, Capt Bulawsky recommended that another section of 81mm mortars be added to the heavy weapons company. This recommendation proved to be a valid one. TOE 7-18R (1 Feb 1955), Infantry Heavy Weapons Company, includes an additional section of mortars. In the following article, Capt Bulawsky gives his latest ideas for improving the indirect fires of the Infantry regiment.—EDITOR.

We're wasting manpower and losing efficiency in our employment of the 60mm mortar. We could increase the effectiveness of our regimental indirect fires by casting the 60 in a revised role—that of a light mortar.

Our current employment classifies the 60 as a medium-light mortar — a job which is too big for it and which is unnecessary now that we have added another section of 81mm mortars to the heavy weapons company.

Some members of our army are suggesting that the 60mm mortar may no longer be required. This is faulty thinking. There is a definite need for this

weapon. It is the company commander's best organic indirect-fire weapon. We should, however, change our thinking about the organization and employment of the 60mm mortar section. By so doing, we will retain the 60 but we will use it in situations more suited to its capabilities and limitations. We will use it as a true light mortar.

This raises two questions. What is a light mortar? How does it fit into our regimental indirect-fire structure?

A light mortar should weigh 20 pounds or less—a one-man load. It should deliver accurate fire on *point* targets between ranges of 200 and 800 yards. It should be equipped with a simple, accurate sight that will reduce possible errors in range determination. It should be capable of operation by drop or trigger fire. It should be provided with HE, illuminating and smoke rounds, weighing less than 3 pounds, which can be fired at minimum and maximum ranges without adding or removing increments. With the exception of a more simple sight and fixed ammunition, our present 60mm mortar can meet these characteristics.

To answer the second question we must consider the other indirect-fire weapons in the regiment. We now have the 4.2" mortar in the regimental heavy mortar company, the 81mm mortar in the battalion heavy weapons company, the 60mm mortar in the weapons platoon of the rifle company and the rifle grenade. While the rifle grenade is not considered an indirect-fire weapon in the same sense as our mortars, it is, nevertheless, a potent indirect-fire weapon in the platoon and the squad. The 60mm mortar fits into this indirect-fire structure between the 81mm mortar and the rifle grenade.

The grenade, with its smaller bursting radius and short range, is effective for close-in targets. The superiority of the 81 for the longer range missions has long been acknowledged. It is for the middle range—200 to 800 yards—that the 60 is ideal. That is the purpose for which it should be used.

Now here is where we can save manpower. We don't need a squad for each 60mm mortar. Five men are out of proportion for a weapon that fills the gap between the rifle grenade and the 81mm mortar. The job can be done and done effectively by a two-man detachment. We should replace the 17-man 60mm mortar section with three 2-man mortar detachments.

This concept of a light mortar and the use of a detachment is not a new one. Many armies, past and present, have used and still use the light mortar.

During World War II, the Japanese had considerable success with a light mortar. This so-called "knee" mortar was particularly suited to jungle warfare.

Most armies of the United Kingdom have light-mortar detachments organic to their Infantry rifle platoons. These detachments generally consist of two men using one 2-inch mortar. The British light mortar weighs 12 pounds and has a maximum effective range of 500 yards. The HE round weighs 2½ pounds and has a lethal bursting radius of 8 yards.

Other foreign armies which have

found a need for the light mortar use detachments consisting of two or, at most, three men.

How would the two-man detachment handle the 60? First, let's consider the attack.

The present mortar section provides close-in support for the attacking rifle platoons in any of three ways:

1. General support from section position when the objective, major portion of the company zone and routes of the advancing platoons can be observed and when the mortars can fire the entire width of the company zone.

2. Attachment of a mortar squad to an attacking rifle platoon when general-support weapons cannot support the platoon because of lack of observation or excessive distance.

3. Mortars not attached to attacking platoons will remain in general support.

The basic concept need not be changed. But attachment to the attacking rifle platoons probably would be used more frequently than heretofore. In fact, it would be the normal way of employing the detachment. As we shall see, the amount of ammunition the detachment could carry would be limited. The mortar would not be capable of placing a volume of fire on area targets.

This limitation would be offset, however, by the rifle platoon leader's ability to bring immediate fire on a point target that confronts the platoon. The mortar gunner would usually have direct observation of the target and the platoon leader would have few control problems since the detachment would be operating with or in the vicinity of the attacking unit.

In the attack, particularly if the detachment were attached, the M1 baseplate would be used. However, a new light-weight mount should be developed. The mortar gunner would carry the mortar, baseplate and six rounds of ammunition. The assistant gunner would carry twelve rounds of ammunition. If the situation should require additional ammunition, several men in the rifle platoon could be designated to carry additional rounds.

In the defense, the 60mm mortar could be used in its normal general-support role, with the M5 mount.

This conversion presents few major problems. The weapon is already organic to the rifle company. The three men taken from each mortar squad can be released for other combat jobs. The main tactical consideration will be a reduction in the light mortar's role as a general-support weapon in the attack. Although we may lose a little in the volume of offensive firepower, we have more than made up for this by the addition of two 81mm mortars to the heavy weapons company and by increased flexibility and immediate availability of offensive firepower.

Our potential enemies outnumber us. By bringing the 60's personnel requirements into line with the mortar's proper role—that of a light mortar—we can increase the over-all effectiveness of our indirect-fire structure and, at the same time, get the most out of our manpower.

Why use five men when two will do the job?

CAPT LAWRENCE H. BULAWSKY received his commission upon graduation from Officer Candidate School at Fort Benning in 1946. He then served as a Military Government Engineering Officer in Korea until 1948. His next assignments were at Fort Ord, California, and in Puerto Rico where he served as a training officer. In 1954, Capt Bulawsky returned to the United States to attend the Advanced Course at The Infantry School. He is presently assigned as an instructor in the Weapons Department of The Infantry School.

Checklists

FOR INFANTRY LEADERS

These are the first in a series of checklists prepared by The Infantry School for company commanders, platoon leaders and squad leaders. When completed, they will be published in a Department of the Army Pamphlet. However, the pamphlet will not be available for some months. In keeping with our policy of bringing to you helpful information as soon as we get our hands on it, we are publishing now checklists on the attack. In the next issue we will cover the defense. Lists for other types of operations will appear in subsequent issues.

A word of caution on checklists. They are not inflexible rules but guides that should be modified to fit the situation. Do not let them become substitutes for thinking! Checklists must not be a "crutch." Use them to check your thinking and free your mind for other considerations.—Editor.

Company Commander

1. Upon receipt of the battalion warning order—
   a. Disseminates applicable portions of the warning order to his subordinates.
   b. Determines what personnel will accompany him when he goes to receive the battalion order.
   c. Initiates as many preparations for the attack as possible based on information contained in the warning order.
2. Upon receipt of the battalion attack order—
   a. Coordinates as much as possible with the adjacent and supporting commanders who were present for the battalion order.

THE ATTACK!

b. Arranges for the attached and supporting weapons representatives who were not present for the battalion order to join his unit.
c. Arranges for final coordination with the following commanders during or after his reconnaissance:
   (1) Adjacent unit commanders. (To exchange plans of attack and arrange for necessary connecting group contact.)
   (2) Supporting weapons unit commanders or representatives. (To assure maximum effectiveness of supporting fires.)
   (3) Commander of the force in contact. (To coordinate the passage of lines; get the latest enemy information; and arrange for possible fire support during the initial stage of the attack.)
d. Plans the use of available time.
e. Makes an estimate of the situation.
f. Makes a preliminary plan of attack to include the—
   (1) Maneuver plan.
   (2) Fire support plan.
g. Tells his subordinates where, when and to whom the attack order will be issued.
h. Plans his reconnaissance. (He may assign reconnaissance responsibilities to subordinates if the time is limited.)
i. Informs the executive officer of the unit's movement from the assembly

area to the attack position.

3. While on reconnaissance, selects—
   a. The attack position.
   b. Routes from the assembly area to the attack position for the company and the weapons carriers.
   c. Off-carrier positions for the organic and attached weapons.
   d. Position and target areas for the weapons platoon and for attached weapons that will remain under company control.
   e. The initial location for the rifle platoons in the attack position.
   f. Zones of action for the attacking rifle platoons.
   g. Routes forward of the line of departure for future use of the weapons carriers.
   h. The method of Infantry-tank team employment, if tanks are attached.
   i. The general location of the command post.
   j. The company observation post(s).
   k. A tentative plan for reorganization and consolidation on the objective.
4. Upon completion of his reconnaissance—
   a. Receives recommendations from organic, attached or supporting unit leaders.
   b. Completes his estimate of the situation.
   c. Completes his plan of maneuver, including the—
      (1) Selection of objectives.
      (2) Specific platoon missions.
      (3) Formation.
      (4) Direction of attack.
      (5) Zone of action.
      (6) Line of departure.
      (7) Time of attack.
      (8) Selection of a tentative assault position.
      (9) Location, initial mission and probable employment of the reserve.
      (10) Security considerations.
   d. Completes the company fire support plan including the—
      (1) Mortar and artillery concentrations.
      (2) Direct fire target areas.
      (3) Fires scheduled by battalion and regiment.
      (4) Emergency signals for lifting and shifting fires.
      (5) Means of communication.
      (6) Specific time of fires and displacement.
      (7) Mission of supporting units in protecting reorganization and consolidation of the objective.
      (8) Method of tactical employment of organic and attached supporting units.
   e. Completes the plan for reorganization and consolidation on the objective.
   f. Prepares such notes as are necessary for the issuance of the order.
5. Upon completion of his plan—
   a. Proceeds to a location previously designated for issuing the order.
   b. Presents a terrain orientation to those personnel who will receive the order.
   c. Issues the five paragraph order, usually orally.
   d. Answers questions and insures that the order is clearly understood.
6. After issuing the order—
   a. Supervises his organic and attached units prior to the time of attack.
   b. Insures that final preparations for the attack are in accord with the company plan of attack.
7. During the attack—
   a. Positions himself in his observation post or, when necessary for control and personal supervision, moves to the portion of the zone of action where operations are most vital to the success of the mission.
   b. Keeps the battalion commander informed of the situation at all times.

c. Insures that lead elements cross the line of departure at the proper time.
d. Coordinates the movements of his attack echelon and the fires of the supporting weapons.
e. Designates the exact location of the assault position.
f. Orders the assault on his own initiative or according to plan.
g. Anticipates situations requiring the employment of his reserve and plans its future employment.

8. Following the seizure of the objective—
a. Reports this fact to the battalion commander.
b. Makes necessary adjustments in the original plan for reorganization and consolidation including actions necessary to repulse enemy counterattacks.
c. Reassigns personnel to key jobs made vacant by casualties.
d. Insures that the ammunition supply is replenished and redistributed.
e. Reports the strength, situation and ammunition status to the battalion commander.
f. Formulates plans for the continuation of the attack, if appropriate.

Platoon Leader

1. After receiving the attack warning order from the company commander—
a. Selects personnel to accompany him when he receives the company attack order. Usually, he designates the platoon sergeant and one messenger.
b. Issues the necessary instructions to the assistant platoon sergeant to prepare the platoon for the attack.
c. Passes on all pertinent elements of the warning order to his subordinates.
d. Proceeds to the point where the attack order is to be issued.

2. On receipt of the attack order from the company commander, accomplishes the following troop leading steps—
a. Begins planning.
(1) Determines the time the platoon attack order is to be issued.
(2) Begins the estimate of the situation by studying—
(*a*) The mission.
(*b*) The enemy and friendly situations.
(*c*) The terrain from his map, sketch or aerial photograph supplemented by whatever ground observation is available from the vicinity where the company attack order was issued.
(3) Makes a preliminary plan based on his quick estimate, including the route to be used.
b. Arranges for—
(1) Issuing the attack order at a point near the line of departure, in the assembly area or at the attack position.

(*a*) Tells the squad leaders when they will receive the attack order.

(*b*) Tells his messenger when to start moving the platoon into an attack position or into another forward assembly area.

(2) His reconnaissance.

(*a*) Selects vantage points from which to confirm or alter his preliminary plan.

(*b*) Plans his coordination with adjacent, supporting and higher commanders.

c. Makes his reconnaissance.

(1) Continually studies the enemy and friendly situation in the light of the platoon mission.

(2) Continues his terrain analysis, based on the five military factors (COCOA).

(3) Selects—

(*a*) The best route forward.

(*b*) The attack position if not already designated by the company commander.

(*c*) A tentative assault position specifying the flanks and general trace of the assault line.

d. Completes his plan and decides upon the—

(1) Combat formations.

(2) Actions at critical terrain features leading to the objective.

(3) Areas of squad responsibility on the objective.

(4) Methods of reorganization and consolidation on the objective including measures to repulse an enemy counterattack.

(5) Employment of organic and crew-served weapons during the attack.

(6) Concentrations for indirect fire weapons.

(7) Control plan including the—

(*a*) Position of the platoon leader.

(*b*) Duties of the platoon sergeant and assistant platoon sergeant.

e. Issues the attack order after presenting a terrain orientation.

3. In the attack position—

a. Completes his final coordination.

b. Supervises the—

(1) Preparations for the attack.

(2) Troop leading procedures used by squad leaders.

c. Issues final instructions.

d. Places the platoon in the proper formation to cross the line of departure.

e. Moves out to cross the line of departure at H-hour.

4. During the conduct of the attack—

a. Supervises the conduct of the attack.

(1) Uses the assistant platoon sergeant to supervise and coordinate the use of the crew-served weapons.

(2) Moves the platoon toward the assault position rapidly, using cover, concealment and supporting fires.

(3) Takes the following actions against enemy resistance—

(*a*) Strives to reduce the effectiveness of enemy fire by his own fire superiority.

(*b*) Maneuvers against the enemy position with one or more rifle squads.

(*c*) Bypasses the enemy position with the assistance of supporting fires.

(*d*) Keeps the company commander informed.

(4) Takes steps, through the company commander, to lift or shift supporting fires.

b. In the assault position—

(1) Deploys with three squads on line.

(2) Supervises their fires.

(3) Assigns the direction of the assault to the base squad.

(4) Spends a minimum amount of time preparing for the assault.

c. When launching the assault—

(1) Overruns the objective to insure

that the enemy has been eliminated.

(2) Takes the following actions to eliminate effective enemy fire—

(a) Directs one or more squads as additional fire-support units.

(*b*) Uses remaining squad(s) to maneuver against the enemy resistance.

d. After clearing the objective—

(1) Reorganizes and consolidates the platoon according to previous plans.

(2) Insures that crew-served weapons arriving on the objective go into position within rifle squad areas.

(3) Receives status reports on personnel and equipment.

(4) Reports platoon status to the company commander.

(5) Inspects the platoon position.

(6) Prepares to continue the attack by—

(*a*) Reevaluating the terrain and enemy situation.

(*b*) Issuing warning orders.

(*c*) Redistributing ammunition and equipment.

Squad Leader

1. After receiving the attack warning order from the platoon leader—

a. Inspects weapons for cleanliness, functioning and battle sight setting.

b. Inspects equipment including web equipment, first aid packet and canteen.

c. Inspects ammunition to see that there are no long rounds and that clips and magazines are clean.

d. Checks the physical condition of the men and notifies the platoon leader of any men physically incapable of making the attack.

2. When receiving the platoon attack order—

a. Takes notes.

b. Asks questions on the terrain orientation.

c. Makes sure he understands the platoon's mission and his squad's part in accomplishing that mission.

d. Asks the questions necessary for a complete understanding of the platoon order.

3. After receiving the attack order, accomplishes the following troop leading steps—

a. Plans his time so that he can make a reconnaissance and still have time to prepare his order.

b. Makes his reconnaissance, considering—

(1) Landmarks to be used as guide posts.

(2) Formations.

(3) Possible danger areas and actions to reduce them.

c. Coordinates with the other squad leaders.

d. Prepares his attack order.

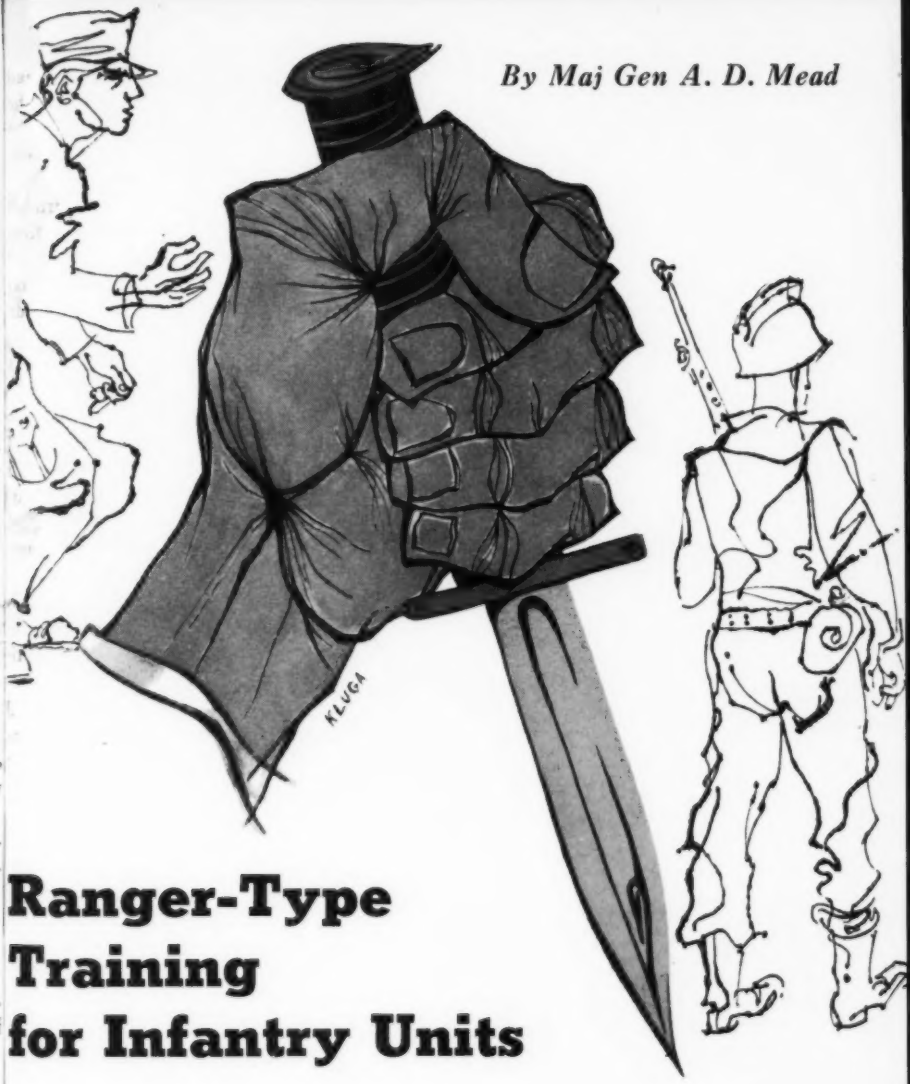
e. Orients the squad on the terrain.
f. Issues the attack order, making certain that each man understands the attack plan.
g. Supervises the preparations for the attack.

4. Takes the following actions in the attack position—
a. Makes final coordination.
b. Moves the squad into the initial formation for crossing the line of departure.
c. Watches for the platoon leader's signal to move out.

5. Takes the following actions during the attack—
a. From the line of departure to the assault position—
(1) Maintains the squad's position in the platoon formation.
(2) Changes the squad's formation according to the terrain.
(3) Maintains visual contact with the other squads in the platoon and, when possible, with the platoon leader.
(4) Takes the following actions when the squad encounters enemy fire—
(*a*) Indirect and long range fire.
1. Moves rapidly through it.
2. Bypasses small concentrations.
(*b*) Direct fire.
1. Hits the ground and returns the fire.
2. Makes a quick estimate and plan for neutralizing or destroying the enemy position.
3. Informs the platoon leader of the situation and the squ plan for eliminating th threat.
b. From the assault position to the jective—
(1) Deploys his squad in a ski line, insuring that each man as he comes on line.
(2) Designates a reference point the objective to be used as a gui post for the base man.
(3) Watches for the platoon leader' signal to start the assault.
(4) Positions himself and his assist ant behind the squad to contro the rate of fire, the direction o the attack and the rate of ad vance.
c. During the reorganization and c solidation—
(1) Watches for the platoon leader' signal to stop the assault and t begin reorganizing and conso dating.
(2) Locates the flanks of the squa area, places each member, assig each a sector of fire and prepare his squad to repulse any enemy counterattack.
(3) Submits a status report to the platoon leader consisting of the following information—
(*a*) Ammunition requirements.
(*b*) Casualties.
(*c*) Replacements.
(*d*) Weapons and equipment needs.
(4) Supervises the improvement of the squad defenses.

. . . We hold the conviction that to salute good Infantry is to: pay tribute to unflinching courage; honor devotion to duty and perfection of discipline that are content only with full attainment of assigned objectives; applaud resourcefulness, skill and stamina that are unsurpassable on the battlefield; salute the men that in every case must take the final and conclusive step to victory.

GENERAL DWIGHT D. EISENHOWER



By Maj Gen A. D. Mead

Ranger-Type Training for Infantry Units

From the maze of uncertainties and unsolved problems connected with tactical atomic warfare one fact stands out crystal clear: The Infantryman of the future will have to be a more rugged individual than his already rugged counterpart of the past.

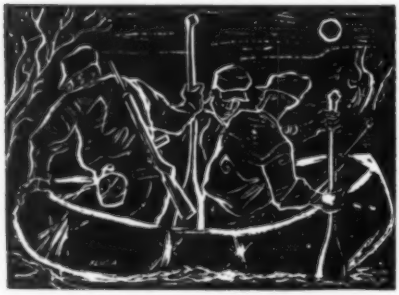
Aside from the past requirements of proficiency in Infantry weapons and tactics, the Infantryman of the future must attain a much higher capacity in the field of rapid marches, concealment and camouflage and hasty field fortifications. In addition he must be mentally conditioned

to fight aggressively, alone or as a part of a small isolated unit.

To prepare an Infantryman to perform in future warfare, intensification of training is required. In seeking means and methods to toughen Infantry training, the search is logically directed toward the most rigorous training conducted by the Army—that of the Ranger.

The story of the Rangers and their operations throughout the history of our country has been one of courage, daring and leadership. In every instance Ranger units have attracted men whose skills in the art of fighting have been unsurpassed. Rangers have played a spectacular and colorful role in the military history and growth of our nation.

To continue the know-how of Ranger training and develop new techniques, the Ranger Department of The Infantry School was organized in September 1951. The mission of this department was to design a course to train small-unit Infantry leaders in command and leadership problems in the field. In addition, this course was designed to improve the physical condition and to instill a high degree of pride in personal appearance, habits and conduct and a real understanding of



the meaning and necessity of discipline within a military unit. This Ranger course is being conducted today and is open to officers and enlisted men alike who possess certain prerequisites. The course, however, is designed primarily for training the individual rather than the small unit.

In order to improve small-unit effectiveness, some method of adapting "Ranger-type" training was needed. It was neither practicable, feasible nor economical to prescribe a program of instruction identical to the Ranger course for all Infantry units since all posts and installations do not have the varied training facilities and terrain available to The Infantry School. It was necessary, therefore, to develop a program of Ranger-type instruction which would be applicable to all Infantry units and adapted to the terrain and facilities currently available at the various division posts.

In seeking ways to insure that we continue to have the best trained Infantrymen in our army, we considered it desirable to place additional emphasis on Ranger-type instruction in the normal training phases of Infantry rifle units, especially at the platoon level. To assist in determining the effectiveness of the small unit conducting Ranger-type training, a regular Infantry rifle platoon of the 3d Infantry Division was selected to take the Ranger course as a unit during its small-unit-training phase. This platoon took the Ranger course during the spring and summer of 1955 at The Infantry School. All individuals finished the course.

Upon completion of this training, it was apparent that the platoon was a much more aggressive and confident unit than one engaged in regular training. The members of the platoon developed a fighting spirit and a sense of pride which inspired weaker members to exert greater effort to maintain the unit standard. The over-all attitude indicated that the rigorous nature of Ranger training provides men with an incentive to perform well. As a result of this experiment,

Ranger-type training was considered most desirable for the small unit and should be included in regular training programs.

In integrating Ranger-type training into training programs, it is envisioned that this type of training will be introduced into the training program in peacetime by conducting it in the post cycle phase. To accomplish this training during mobilization, it must be made a part of the appropriate army training programs. Modification of existing army training programs to include realistic and tough Ranger-type training is expected to achieve the desired objectives. Integration of Ranger-type training into existing training programs will raise the individual proficiency of the Infantry soldier. It will increase the flexibility of employment of Infantry units by making them adaptable to a wider variety of terrain and climatic conditions. In addition to sound and realistic training, a spirit of unit competition will be engendered in the small units with resultant improvement in esprit, morale and physical and mental conditioning. The challenge offered by the integration of Ranger-type training into the training programs should stimulate interest of the participants and assist in developing latent leadership.

With this in mind, two unit tests of proposed Ranger-type instruction are currently being conducted by Infantry divisions in the Fifth Army. The purpose of these tests is to determine the optimum amount of Ranger-type training for both formal army training programs and post cycle training programs.

The 8th Infantry Division at Fort Carson, Colorado, is conducting one of the tests to determine the maximum feasible amount of Ranger-type instruction that can be integrated into existing army training programs without extending or eliminating other essential subjects. All subjects that are considered essential for Ranger-type field problems are covered in the normal basic combat, advanced individual, squad and portions of the platoon training without changing materially the subjects, hours and scope of subjects now prescribed. Certain special subjects such as survival, patrol tips and

field craft expedients, etc., are conducted utilizing portions of "commander's time." During the platoon phase of training, the rifle platoons are moved to the field for a three-week period to conduct Ranger-type field problems.

The 1st Infantry Division at Fort Riley, Kansas, is unit-testing a proposed five-week program of instruction designed as a single block of training for post cycle training. This program is divided into two distinct phases. Phase I is a two-week review and preparatory

MAJ GEN ARMISTEAD D. MEAD was commissioned in the Infantry upon graduation from USMA in 1924. Prior to World War II he served in Infantry assignments in the United States, the Philippines and Hawaii and was an instructor at The Infantry School. During the war he served in both the Pacific and European Theaters. Later, returning to The Infantry School, he was in turn director of the Staff and Tactical Departments. In Korea he was Assistant Division Commander of the 3d Division. After a tour as Chief of Staff, Third Army, he returned to the Far East and commanded the 1st Cavalry Division. In his present assignment as Chief of Infantry, Headquarters, Continental Army Command, he is the foremost spokesman for the Infantry.

course to cover in detail all subjects considered essential to the individual prior to participating in Ranger-type field problems. Special emphasis is placed on physical conditioning, map reading, demolitions, mines and booby traps. Phase II follows immediately and consists of a three-week period of Ranger-type field problems for the rifle platoons.

The training programs which will eventually result from this testing should be the best training programs that can be produced for peacetime training as well as for the mobilization training of the Infantryman. The personnel, equipment, facilities and time should not exceed those which will be available either in peacetime training or during mobilization training. Ranger-type training is expected to assist in developing self-confidence, aggressive spirit, unit pride and physical fitness.

Throughout the history of our country, the Infantryman can point with pride to his accomplishments in military operations. With tougher and more realistic training in the offing, the Infantryman of tomorrow should be even better equipped professionally, mentally and physically to undertake any assigned mission.

Gentlemen, here they come, the queen of battle, the Infantrymen, the old foot sloggers. Twenty-five years ago at West Point an old tactical professor used to say to us: "Never overlook the doughboy. A thousand years ago it was the foot soldiers who won and held territory and it will be the same a thousand years from now. . . ." Look at 'em, the doughboys, bless 'em.

LT GEN GEORGE S. PATTON, JR.

KNOW THYSELF!

Any officer on active duty can review his efficiency reports and AG 201 file—with a minimum of effort.

By Capt Boyd T. Bashore

The next time you're in Washington, don't pass up the opportunity to check your personnel records. It takes only a few minutes in the Pentagon to see for yourself how your army career is progressing and how you have been rated by superiors. Any officer on active duty may, with little inconvenience, examine his efficiency reports and AG 201 File.

Whether you're a regular army officer or a reservist serving on a category, a profitable half hour can be spent examining your personnel files. The records show how you will appear to the next selection board which considers you for promotion. As a matter of personal interest and pride, your efficiency reports will point up your leadership abilities and will reveal weaknesses which you can work to correct.

I recently examined my records in The Adjutant General's Office but experienced some bothersome delays due to lack of information about the Pentagon. Since then, a number of friends have asked how they can make a similar review of their own records with a minimum of wasted time and effort.

Many of them had false notions about complicated, time-consuming procedures. Others wanted to know about sending someone to Washington to review their records for them. A number of them asked about correcting discrepancies and answering adverse statements found in their efficiency reports.

Here are the most frequently asked questions with answers from The Adjutant General's Office in Washington, D. C.

Q. What steps must an officer take to make a review of his records?

A. If he expects to visit Washington, he should write to the Chief, Personnel Information Branch, The Adjutant General's Office, Washington 25, D. C., stating the date of his arrival and requesting an appointment. This should be done 8 to 10 days before arrival in Washington.

Q. But suppose an officer can't plan far enough ahead to write for an appointment or has the opportunity to visit Washington without advance notice?

A. As soon as possible, he should telephone Liberty 5-6700, Extension 71111, and request a special appointment. Every effort will be made to have his file available in about three hours.

Q. If an officer is unable to go to the Pentagon, can someone review his records for him?

A. Yes. Joint Army-Air Force Bulletin No. 31, dated 28 October 1949, authorizes an officer in this situation to appoint a representative to review his files. Here is a copy of the letter by which this representative may be appointed:

> The Adjutant General
> Department of the Army
> Washington 25, D. C.
>
> I (name and serial number typed or printed) hereby certify that I am on active duty and request that (full name and address), my authorized representative, be allowed to review my personal records in the same manner and under the same regulations as would be permitted if I presented myself in person for this purpose.
>
> Signature
> Grade
> Serial number
> Current assignment

Q. Does a representative follow the same procedure that the officer himself would use in making this review?

A. Yes — but remember that reviewing another officer's record is a difficult job. The representative should have sufficient background information to make the review worthwhile.

Q. Should the officer or his representative make any advance preparations?

A. Yes. The officer should make a list of items in which he is most interested and which he believes will be most profitable. This permits concentration on important points before going to less important matters.

He should include a list of any service dates of which he is uncertain. He may need these in the future for retirement or some other important purpose.

The officer should know the provisions of AR 600-185, Officer Efficiency Reports; SR 600-185-1, Officer Efficiency Reports; and AR 600-186, Filing of Adverse Matter in Military Personnel Files.

It will help him to read the article, "The Officer Promotion Story," *Army Information Digest*, April 1955, p. 13.

Q. How does an officer or his representative find the file after arrival in Washington?

A. By telephoning the Record Review Unit, Liberty 5-6700, Extension 71111, and informing the receptionist of his arrival. The time of the appointment can be verified then.

Next, he will go to the Pentagon. The receptionist at the entrance will refer him to the Record Review Unit, Room 1E 759, where the file will be ready.

Q. What happens after the officer asks for his file?

A. The receptionist will direct him to a

table and bring the file to him. He will receive a sheet of instructions calling attention to the provision of Criminal Codes 128-129 concerning the willful and unlawful removal, mutilation or destruction of records. She will supply a comment sheet, scratch pad and pencil.

Q. Will there be someone available to answer questions about the records?

A. The experienced receptionist is trained to answer most questions. An officer of the Efficiency Report Section — next door to the Record Review Unit — will answer questions about efficiency reports.

Q. What is the comment sheet for?

A. While reviewing his file, an officer may comment on any matter which he believes requires adjustment. He may also specify any omissions which come to his attention. The receptionist may take care of some of these matters. For other items, the comment sheet is used in the same manner as a letter and referred to the appropriate sections of TAGO for action. Upon completion of action, the sheet is indorsed to the officer for his information.

Q. May an officer make extracts or copies of papers in his file?

A. Yes. He may make any notes, extracts or copies he wants. If the officer asks The Adjutant General's Office to supply extracts or copies, he must pay a service charge.

Q. Can the receptionist make changes in the record if the officer notes any discrepancies?

A. No. She is not authorized to alter records in any way.

Q. Then how can discrepancies be corrected?

A. Here is another use for the official comment sheet.

Requests for changes will be brought to the attention of the appropriate action unit. When a decision has been made on the requests, the comment sheet will be indorsed and returned to the officer.

Q. What happens if the reviewer finds material which doesn't pertain to him?

A. He should mark such misfiles with the tabs or clips furnished at the beginning of the review. He should also make a written note to call the error to the attention of the receptionist.

Q. Suppose an officer discovers adverse or derogatory comments in his file? What action can he take?

A. Nothing may be removed from the file. There is no objection, however, to submitting facts of record to offset or refute the documents to which he

objects. Any refutations are entered on the comment sheet and left with the receptionist. The officer also may state his case in a special letter direct to The Adjutant General, Department of the Army, Attention: AGPI-O.

The Adjutant General's Office makes it easy for an officer to review his records. He should plan to examine his personnel files periodically — either in person or through a representative. This is the best way for him to evaluate his performance and to see himself as the next selection board will see him.

CAPT BOYD T. BASHORE enlisted in the army in 1943. The following year he attended Parachute School and then remained at the school as an instructor. In 1945 he received a commission upon graduation from Officer Candidate School but later resigned his commission to attend the United States Military Academy. Upon graduation, he was assigned to the 508th Airborne Infantry Regimental Combat Team. Two years later he was sent to Europe where he served as a staff officer and company commander in the 42d Armored Infantry Regiment. Capt Bashore is attending The Infantry School Advanced Course.

KEEP 'EM ROLLING

In April 1955, the Quarterly carried an article titled, "Keep 'Em Rolling," which has stimulated an unusual amount of interest. A full year after its publication the Quarterly is still receiving highly favorable comments on this article along with requests for permission to reproduce it. "Keep 'Em Rolling" was written by Colonel Robert E. Holman, Director of the Automotive Department, The Infantry School. In it he discusses automotive maintenance procedures and outlines a ready-to-use 16-hour preventive maintenance program. Coming at a time when mobility in warfare is such an important consideration, this article has caused many commanders to think about and evaluate their own maintenance programs. Some, like Colonel W. B. Kunzig, a portion of whose letter appears in this issue's Letters to the Editor, have written to say that every commander down to company level should have a copy of the article. More than 2000 have purchased copies of the complete program which has been published by the Automotive Department in a book titled, "Commanders' Automotive Preventive Maintenance Training Program." Commanders who do not have a copy of the April 1955 Quarterly and who are interested in this timely and helpful material may obtain a mimeographed copy of the article by writing The Commandant, The Infantry School, Attn: Publications and Visual Aids Office. They may purchase the book for $1.50 from: The Book Department, The Infantry School, Ft. Benning Ga.

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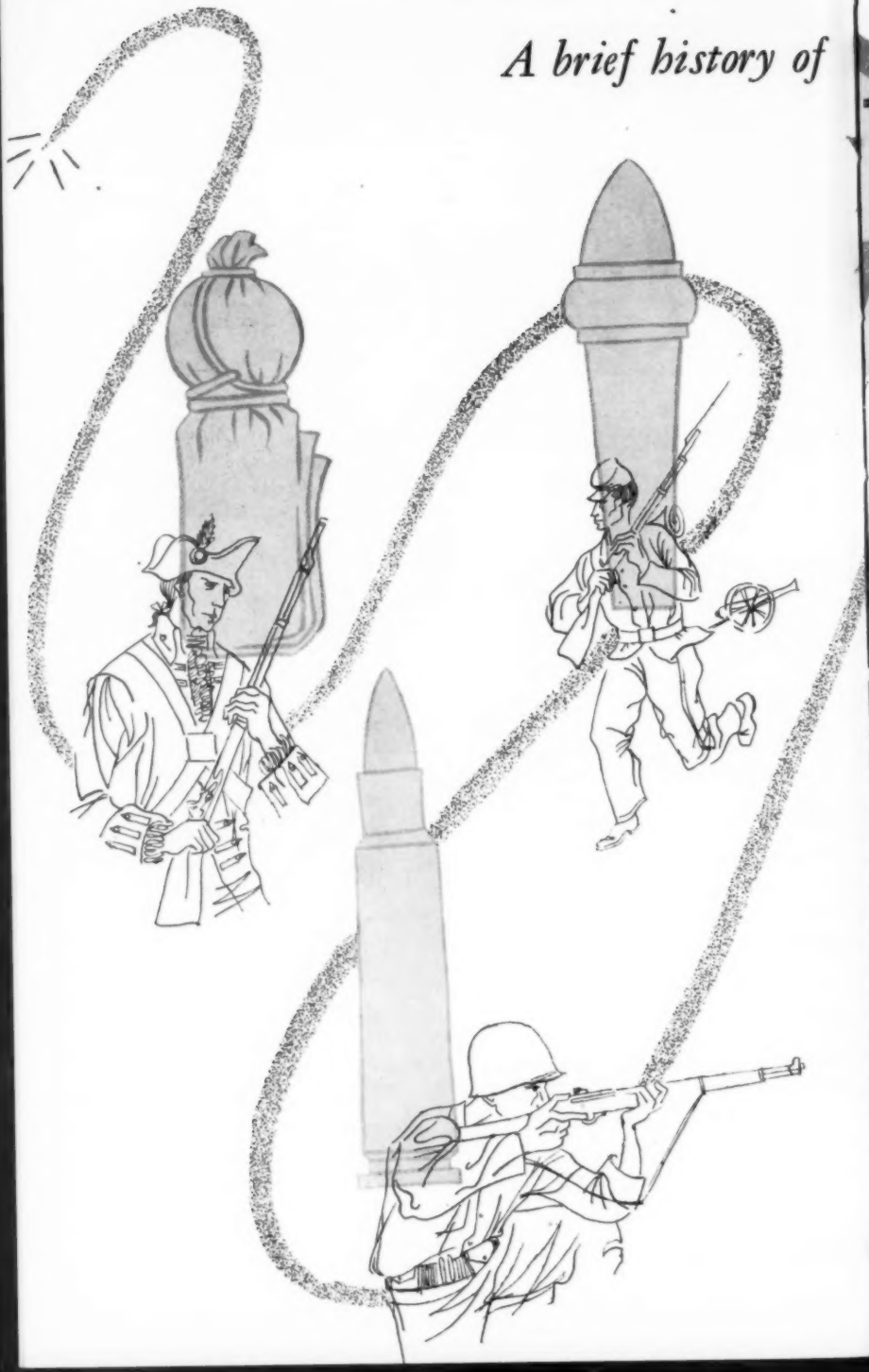
A brief history of



Powders *and* Primers

Gunpowder, originally intended for celebrating weddings, birthdays and religious holidays, probably has brought more grief and destruction to the world than any other invention. As early as 1600 B.C., the Chinese and Hindus were using fireworks to express their joy and happiness on festive occasions.

We don't know who first turned the peaceful displays into weapons of war. But in 325 B.C. Alexander the Great encountered strange and terrible "thunderbolts shot from the walls" of cities in India. The Chinese used wooden cannons long before Europeans ever thought of gunpowder.

In 1242, Roger Bacon, an English philosopher, wrote an anagram in which he concealed a description of gunpowder in its basic form—a mixture of saltpeter, charcoal and sulfur. After studying Bacon's writings, Berthold Schwartz, a German monk from Freiburg, compounded a mixture of 75% saltpeter, 10% sulfur and 15% charcoal. We use practically the same formula today in making black powder. Historians credit Schwartz with discovering gunpowder in 1313. After he described various properties of his "invention" in 1320, Central Europeans quickly became alert to its wartime usefulness. It wasn't long before they devised a way to kill each other with it.

The first primer, crude but effective, was the slow match—a piece of rope or some other slow-burning material. The shooter would hold it to the touch hole until the powder train leading into the propellent charge caught fire.

About 1460 a flash pan was fixed to the side of various small arms which allowed the charge to be ignited much faster. A priming charge of powder was

By Capt Arthur R. Underwood, Jr.

poured into the flash pan which led through a hole in the side of the weapon to the propellant. In effect, the firer

would set off the propellent charge when he touched his match to the powder in the flash pan. Later, a coarse powder was used as the propellant and a finer powder for priming.

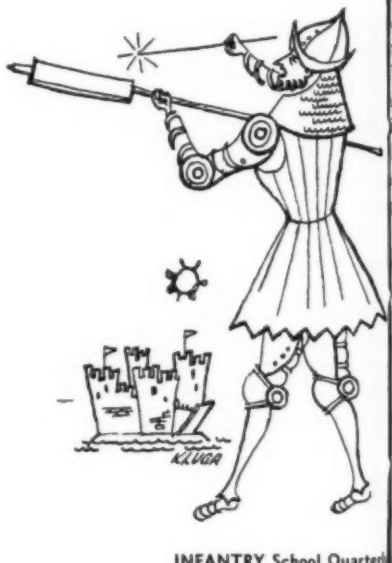
In the sixteenth century, the wheel lock was used to ignite the priming powder but was superseded by the flintlock a century later. Both mechanisms relied upon a flint acting against a rough surface to make sparks fly into the flash pan.

One account credits the invention of the flintlock to marauders and robbers who studied and simplified the expensive wheel lock. They wanted to do away with both the lighted match which they had to carry for their old weapons and the complicated wheel lock on their newer weapons. The British army used flintlocks for more than 150 years until it adopted a modern priming system in 1840.

By the late eighteenth century, several men were experimenting with the explosive qualities of fulminates. (A fulminate is an explosive salt formed from various metals. Used in connection with munitions, the term generally refers to the salt produced by the action of ethyl alcohol and nitric acid on mercuric nitrate.) The primary difference between fulminates and ordinary gunpowder is the method of ignition. Fulminates are more readily ignited by striking (percussion) and release greater force than if ignited by other means. Gunpowder also can be ignited by percussion between two metal surfaces but releases no more force than when ignited by fire.

Several attempts were made to replace the saltpeter in the gunpowder with a fulminate or to combine the fulminate with other combustible materials to form a new kind of explosive powder. Fulminate-of-mercury pellets were developed in 1799 but proved impractical because they exploded so fast that they blew the propellent powder out of the gun without igniting it.

It remained for the Rev. Alexander Forsyth, a Scottish clergyman, to adapt the fulminates to the priming and ignition of the propellent charge. He patented his process in England in 1807.



gaining exclusive rights for using fulminates by percussion as a means of igniting propellent charges.

Forsyth formed a powder from the fulminate which he loaded into the barrel of a weapon, following it with the propellent charge and then the ball. He placed a piston in the rear of the barrel so that pressure from an external hammer would cause the piston to strike the fulminating powder and explode it. The explosion was channeled to flash into the propellant, igniting it and sending the ball out the muzzle. This system is essentially the same as that used in modern firearms. However, the British government preferred to go along with the flintlock and Forsyth retired to his parish.

After his retirement, Forsyth's patent was infringed. Several forms of fulminating powder were developed and guns were modified to use the new priming compound in various forms. In 1821, the Westley-Richards detonating gun was patented. It used fulminate in any form —powder, pellets, balls or paper caps.

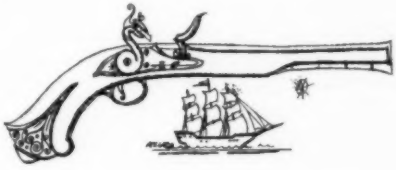
At the same time, copper caps came into general use. The fulminate was enclosed in the cap, which was placed on top of a nipple screwed into the breech. With the fall of the hammer, the cap exploded down through the nipple and ignited the propellant in the breech. From that time until 1870 only minor changes were made in the size, shape and placement of primers.

When the propellant burns, it gives off gases which propel the bullet through the barrel. For best results the gas must be given off as quickly as possible and at an increasing rate. The problem of getting powder to burn at an increasing rate, however, baffled munitions experts until General Thomas J. Rodman of Army Ordnance discovered the principles of progressive burning in 1860.

By varying the shape and density of the powder grain, General Rodman found that he could increase or decrease the rate of burning. He calculated that an increase in the rate of burning would generate gas at a faster rate. Conversely, if the powder burned slowly, it would generate gas more slowly. Rodman's principles became known as progressive and degressive burning.

But getting the powder to burn progressively was another matter. To achieve this, Rodman recommended that the powder be pressed into denser, regular-shaped grains. Although this process gave better control of the burning rate, it did not produce progressive burning.

This problem continued to plague ordnance research for 26 years. It was not



solved until the invention of smokeless powder. In the meantime, however, the search for a more efficient cartridge turned from the propellant to the primer.

In 1866, Colonel Boxer of the English Ordnance Department, developed the Boxer cartridge for the Snider rifle. He used a separate primer in a metal cup which was crimped into the cartridge case during manufacture. When the end of the cup was punched, the priming mixture was crushed against an anvil and detonated.

Upon detonation, the flash of the priming mixture passed around the base of the anvil to a communication hole in the center of the cartridge. This communication hole led to the propelling charge and allowed the flash to ignite it.

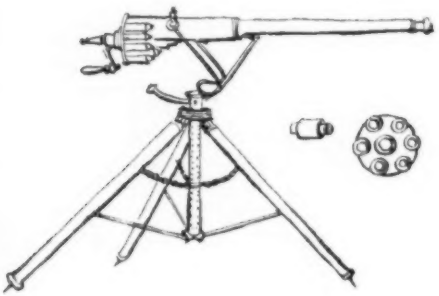
The Boxer primer gave thorough and consistent priming action, improved accuracy and was essentially the same as the

primers of current American small arms.

In 1880, underburned charcoal was substituted for fully burned charcoal. This brown or cocoa powder burned more slowly than its black counterpart and thus gave better control over the rate at which the propellant burned. Brown powder was adopted for larger caliber weapons.

Until the late nineteenth century, all powders had been mechanical mixtures which could not burn as consistently as a chemical compound. Smokeless powders were compounded chemically in 1886. This powder burned more slowly than its predecessors and produced practically no smoke. Smokeless powders, which could be produced in any shape or form, replaced all black and brown powders except for primers and blank rounds.

In making smokeless powder, cotton or any other form of cellulose is soaked in a solution of nitric acid and sulfuric acids. The acids change the chemical composition of the cellulose to form a highly inflammable compound, nitrocellulose (guncotton). When the nitrocellulose has been dried, it is dissolved in a mixture of ether and alcohol to produce a gelatinous substance called a colloid. The colloid is extruded like spaghetti into any desired shape and run under a series of knives which cut it to the length specified. Powders made in this way are called single-base powders.



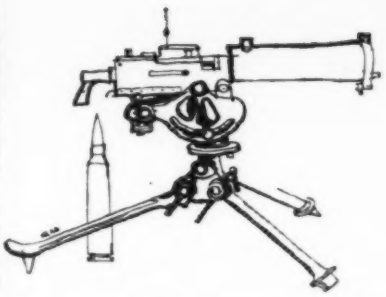
Efforts to obtain a more powerful propellant brought about the union of guncotton and nitroglycerin. This union opened a new field of double-base powders. On burning in an enclosed area guncotton does not have enough oxygen to turn all of its carbon into gas, whereas nitroglycerin has too much oxygen. When mixed properly, these two ingredients supplement each other and form nitrogen, carbon dioxide and water—all in a gaseous state.

To obtain high velocities, we must have a propellant which will generate a maximum amount of gases. The gases will, in the confined space of the chamber, exert high pressures on the bullet and send it down the bore. As the bullet moves away from the chamber and opens more space for the gases to fill, the pressure on the bullet's base drops.

High velocity becomes a problem of maintaining the highest possible pressure on the base of the bullet. To accomplish this, the powder is made in tubular form with a single perforation running through the center of the cylindrical grains. When the primer is detonated, the powder is ignited on the inside of the grains as well as the outside. While the burning surface on the outside of the grain (and consequently the rate of gas generation) decreases, the burning surface and rate of gas generation from the inside of the grain increases.

Since pistol powders have a much shorter burning period (because of the short barrel), they are made in the form of cords and sliced into very thin flakes. These flakes present a maximum amount of burning surface initially and are so thin that they are consumed almost instantaneously.

Smokeless powders were an improvement but they created new problems. Burning powder would leave the bore fairly clean because there were few impurities in the powder compound. This



provided a relatively clean surface for the residue of the primer to be deposited upon. It was not until 1922 that American shooters realized that the rust in their rifle barrels came from deposits of primer compound. Barrels would rust even after the most thorough cleaning and oiling. The culprit was tracked down and found to be the potassium chlorate used in the primer. Potassium chlorate got into scratches in the barrel and was not affected by cleaning compounds. It needed no air to react with the metal and, consequently, rust would appear even after the bore had been heavily oiled.

American experts soon found that the idea of a noncorrosive primer was not new. The Germans had solved the problem in 1901 by substituting barium nitrate for potassium chlorate. The Swiss, who had been using a noncorrosive primer since 1911, made no effort to keep their compounds a secret. Accounts of their experiments and the composition of their final priming compound had been written up widely in their scientific journals.

Experiments in this country first followed the path taken by the Swiss. These early noncorrosive primers all used fulminate of mercury, which gave them a very short storage life. After a year of storage, ammunition with mercuric primers would cause hangfires and misfires. Research shifted and several successful mixtures containing barium nitrate and lead trinitrorescorcinate were developed. Because of strict Ordnance specifications for storage, hangfires and misfires, it was not until 1947 that a noncorrosive primer was approved for American military ammunition. At present, all small arms ammunition is being made with noncorrosive primers.

In 1947 another step forward came when the United States adopted ball powder for its small-arms propellants. Because of its progressive burning, a given amount of ball powder will produce better ballistic results than an equal amount of single-perforated-grain powder. Its ball shape ordinarily would cause the powder to burn at a decreasing rate because its surface diminishes continuously as it burns. However, the powder is coated with a deterrent which is stronger on the outside of the grain and loses strength toward the center. The deterrent starts burning slowly and, as it grows weaker, the burning rate speeds up. Consequently, gas is given off at an increased rate as the powder grain is consumed. This maintains the initial chamber pressure longer than does a single-perforated grain which gives off gas uniformly.

Ball powder is safer to make than ordinary smokeless powder. The entire process, from the formation of the nitrocellulose to the final coating of the balls with the deterrent, takes place under water.

Nitrocellulose is dissolved in an ethyl-acetate solvent and run into vats under water. Diphenylamin is placed in the vats to react with the nitric oxides and thus stabilize the powder. Paddles break up the powder lacquer and a protective colloid is added to prevent the lacquer particles from rejoining. The lacquer is agitated until the particles are round and of the desired size. The solution is heated to drive off the solvent, leaving the powder balls hard and still in the water. Sodium sulphate is added to draw the water out of the hard balls by osmosis.

The balls are screened for size and carried in the water to storage bins. The proper size is drawn from the bins and, still under water, is given two coatings which determine the final ballistic characteristics of the powder. The first is nitroglycerin, which increases the total energy of the powder, and the second is the deterrent.

Controlled heat permits the deterrent to permeate to a certain depth. From here the powder is placed in driers and rolled in graphite to prevent static electricity.

The powder is given a final screening and placed in storage until needed. Samples are tested after each screening and, from this data, batches of powder can be combined to fill any required ballistic specifications.

Gunpowder has come of age. It is produced in a variety of forms to fit specific needs. Our powders and primers have been perfected to the point where there is a minimum of corrosion and a maximum of performance. This does not mean that there can be no further improvements. With the trend toward higher velocities, giving flatter trajectories, and the use of smaller-caliber weapons, improvements are still being made. As long as there is a threat of war, we must exert every effort to maintain and increase the accuracy of our weapons.

CAPT ARTHUR R. UNDERWOOD, JR is master of many trades. He is a weapons expert, an army historian and a frequent contributor to The Infantry School Quarterly. A 1949 graduate of the United States Military Academy, Capt Underwood completed the Basic Infantry Officer Course at Fort Benning before being assigned to the 65th Infantry Regiment in Korea where he served as a platoon leader, executive officer and company commander. In 1952, he returned to the United States and became a tactical officer in the Officer Candidate School at Fort Benning. A year later, he was assigned to The Infantry School's Weapons Department. He is attending the Advanced Course at The Infantry School.

ULYSSES

Chances are, even the Quarterly wouldn't have followed Ulysses on his mythical travels. But the Quarterly *will* follow *you* if you send your change of address to: Chief, Circulation Section, The Infantry School Quarterly, The Infantry School, Fort Benning, Georgia.

Where are YOUR Leaders?

...oo many potential leaders are sitting at desks

By Capt W. F. Strobridge

"But, captain, I simply haven't got a man who could make a good squad leader," moaned the lieutenant. "Maybe in one of the other platoons . . . ."

"Nuts!" exclaimed the captain. "For the first time in a year we have enough men to fill up your third squad and you haven't got a squad leader. Sergeant, give me that company roster!"

"I could handle that job, sir," said a voice from behind the typewriter. "Besides, sir," the company clerk continued, "I joined the army to be a soldier, not a clerk."

The company commander turned toward the long, lean corporal. Clerks

were hard to get and the corporal was good. He was intelligent, conscientious, neat, with an Area I score of 123.

Put yourself in the company commander's place. . . . How would you have reacted to the corporal's statement?

Before you answer, let's look at a few facts.

Today, more than ever before, our Infantry soldier must be alert and adaptable. He must be able to measure up in

an era of quick-moving warfare, in which units of battalion size and smaller operate alone. Even more important, he must have good leadership. All of us who wear crossed rifles will agree with these statements.

Many of the HUMRO-type studies confirm these thoughts. Yet, it often seems that each higher headquarters, in descending order, pulls out the best prospects for staff jobs. The field is pretty well culled before the men get to the squad or platoon. As guilty as these higher headquarters may be, however, we in the smaller Infantry units are also guilty of overloading our headquarters with talent. Regimental, battalion and company headquarters all select the most intelligent, the best educated, the most alert men for jobs, regardless of whether they are specifically suited to the job or whether they could be used in a leadership position.

A case in point occurred recently at one of our training centers. A sergeant was calling off the names of a group of replacements. There was no response to one name. The sergeant shouted the name several times but still no response. Finally a weak voice answered, "They kept him up at battalion. He can type." The man was an excellent rifle shot, in good physical condition, with a high-school education and smart but, "He could type."

The problem of getting good men to lead our units is our own responsibility. While we cry for potential leaders, we allow much of our talent to wither on the vine.

A look into several units revealed the following:

One company's mail clerk was a leadership school graduate. The company detail man had several years of clerical experience and, to compound the felony, could type better than both the mail clerk and the company clerk. The mail clerk's potential leadership, in this case, was being wasted, while a more suitable replacement spent his time cutting grass.

In another company, all four men of a communications team had the characteristics and mental ability of leaders. Three of the four were put into a rifle platoon and their vacancies were filled with dependable men of lesser ability. Within six months, all three former members of the communications team were promoted, were handling positions of leadership and two had graduated from the division's noncommissioned officer academy.

A final example concerns a clerk sent from battalion headquarters to a rifle company. In a year he was a sergeant and an honor graduate of the division's leadership school.

Too much potential leadership is being wasted in our own headquarters, waiting for a chance to prove its worth.

Nor is the enlisted man the only one whose ability and talent are being wasted. Junior officers also are included. There are many regiments where capable, eager second lieutenants are assigned to assistant staff jobs, while first lieutenants who need staff experience after three or more years with the troops are kept in line assignments. Once again, as with the enlisted men, potential leadership is being stifled.

The Infantry School is aware of these problems and constantly endeavors to resolve them through its instruction. The School's doctrine emphatically stresses the importance of placing the "right man in the right job."

As individual Infantrymen, we can also help to correct this situation. We can be honest with ourselves. We can look at our own headquarters and see that we really don't need a man with a business administration degree for a company clerk if he has the potential of making a squad leader.

This is not easy to do. It's human nature to surround ourselves with the best talent we can obtain—to grab the good man to do our immediate job. But we simply must look beyond our own headquarters and consider the needs of our units. Combat effectiveness must be the guide.

To do this we must know our men. That's simple leadership. We must know not only the man's name and whether his boots shine but, more important, we must know his specific qualifications. This will make it easier to put him in a job where he will do the most good for himself and the army.

Finally, we must develop leadership qualities in our subordinates. We should allow our privates and pfc's to give drill and PT. We can make them assistant instructors for classes. We must use our junior officers in troop-leading positions.

Let's examine our units and headquarters for talent that is being wasted. Let's get qualified men and potential leaders into our squads and platoons where they are needed.

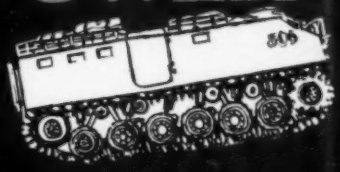
Oh, yes, what about our young corporal, the company clerk? The captain reluctantly released him to take over the squad. Later, he went overseas and earned a battlefield promotion. Right now he is a captain himself.

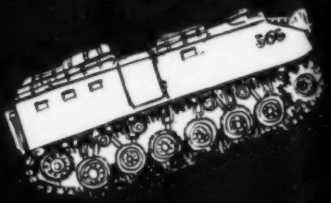
Capt William F. Strobridge has the unique distinction of having held almost every small-unit command position, ranging from squad leader to company commander. He began his military career by enlisting in 1947. Four years later, he received a battlefield commission while serving with the 3d Division in Korea. In 1953, he attended the Associate Company Officer Course at The Infantry School and then was assigned to the School Brigade at Fort Benning. After another tour with the 3d Division, he assumed his present role as an administrative officer in Germany. Capt Strobridge was awarded the Silver Star and the Purple Heart for his services in Korea.

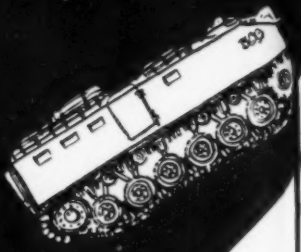
One who is seeking a profound understanding of the fundamentals of war . . . must understand esprit de corps. This spirit is the cement which binds together all qualities which, taken together, give an army military value.

Von Clausewitz

FIRE POWER

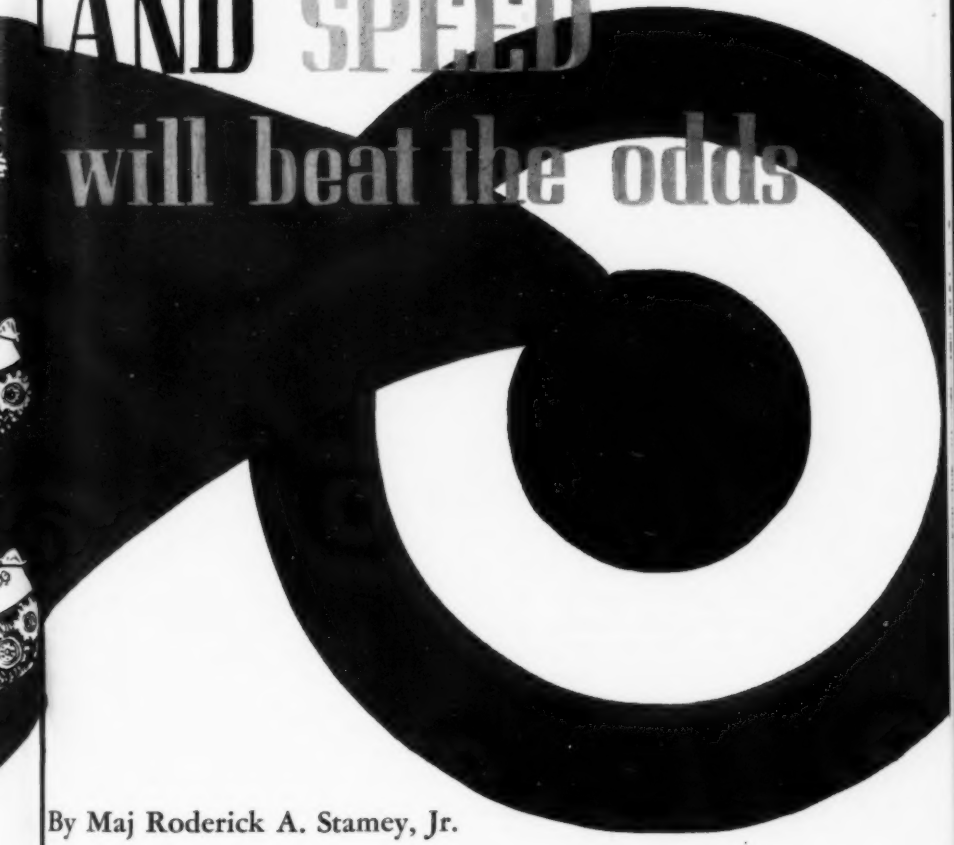






More mobility for the foot soldier will give us that one step advantage on the battlefield.

AND SPEED will beat the odds



By Maj Roderick A. Stamey, Jr.

There are some refreshing indications that we are getting over the tremblies and are now going about the business of working the atomic bomb into our weapons system. This is good, and to get a sound underpinning we need to understand that terms like "atomic war" and "conventional war" have no true meaning. They are only symptoms of the confusion we experience in trying to fit the new weapon into our system. When the atomic bomb made its appearance, atomic warfare became conventional warfare. Whether the atomic bomb is used or not makes no difference. Our tactics have to be geared to the supposition that it will be used.

We should give the atomic bomb the recognition it deserves, but not be blinded to the real danger. The belief that tactical atomic weapons are the key to decisive results reflects a gross misunderstanding. If such were the case, our potential enemy could also expect decisive results. Let's not forget that he also has an atomic capability. Further, he is intelligent, clever and most uncooperative. We have no basis whatever to expect him to follow a tactical course of action that would facilitate our destruction of his forces with atomic weapons. The real danger is his superiority in men, tanks, planes and guns. But we can cope with

this danger. Genghis Khan and Napoleon grew fat on poor odds.

As an area weapon, the atom is capable of magnificent results. But it has its limitations. The outstanding one is its requirement for targets sufficiently important to merit its use. Target importance stems from concentration and criticalness. Acquisition of target becomes extremely difficult when enemy forces are dispersed and critical installations are hidden. In such a case we are unable to realize the full capabilities of the weapon. Though it dictates the conditions of the battlefield, we are denied decisive results. But we need decisive results.

It is precisely these conditions of the battlefield that offer us our opportunity for victory. A mutual atomic capability will force both ourselves and our enemy into dispersed formations. On any given front neither of us will enjoy a numerical advantage. The potentialities of his mass army are negated. Locally we can face him on something approaching even terms. Already the odds change in our favor. Still, we don't want to trade one for one.

Fortunately we have the economic and technological capabilities of acquiring battlefield mobility that will permit us to concentrate rapidly into a superior mass to strike with decisive results and return to dispersed formations. Superior battlefield mobility contemplates increased Infantry mobility. Though Infantry units comprise the major portion of ground forces, they possess the least degree of mobility. Here lies the greatest opportunity for achieving the advantages of increased battlefield mobility. Here the odds can change definitely in our favor.

The physical capabilities of the individual soldier with weapon and equipment limit his cross-country movement to a rate of 1.5 miles an hour during daylight hours. Obviously a type of carrier will be required to furnish the rapid cross-country movement we desire. By adding light armor, we are able to transport the Infantryman to the point where he can perform his mission in optimum physical condition. If we weld the men and the machines together with a modern organization providing a large measure of flexibility and decentralized control, we have what may be called mechanized Infantry; Infantry that employs lightly armored vehicles to move across country to a point where it dismounts and enters action on foot.

Having outlined the conditions of the modern battlefield and having determined the critical importance of mobility, let us formulate our tactical concept. As a general condition, the concept conceives the use, or threatened use, of tactical atomic weapons to force the enemy to dispersed formations. This will require him to accept grave risks in massing for offensive or defensive operations. Then we employ our nonatomic weapons, together with superior mobility, to defeat him in detail. Of course, this is an oversimplification as stated, so let's explore a few of the tactical principles required in implementing the concept.

The losses we will experience from enemy atomic weapons will be less in a series of smaller actions. This is especially true at the beginning of hostilities when his stockpile is largest. As he depletes his supply, we can risk larger actions with less expectation of losses. Additionally, a series of swift, decisive, successful offensive actions will affect enemy morale, even though they are relatively small.

Unless we have a reasonable expectation of success, we should avoid action. Only a wise and judicious employment of our forces can prevent a war of attrition. By avoiding action, it is not contemplated that we break contact and bug out every time the situation appears grim.

It doesn't mean that there will be no small-unit actions resulting in local reverses. It means avoiding decisive major actions until the tactical advantage is ours. Though forced to avoid decisive action, we must continue harassing actions by small units. Such actions can quicken the process of bringing about the tactical advantage required for larger offensive operations.

We must seek decisive results so we won't have to engage the same enemy force twice. Defeat in detail is like fighting an octopus. It results in victory only when the last arm is cut off. However, with the destruction of each arm, the monster's strength diminishes. It is not enough to contain an enemy penetration or to drive him from a terrain feature. These are actions without decisive results. Tomorrow he will penetrate again or we will have to force him from another objective. The destruction of the enemy must be more direct. Every action must result in a diminution of enemy strength, rather than seizing land area he occupies. Seizure of terrain features to facilitate further operations is a dangerous course of action. First of all, such objectives do not guarantee decisive results. Secondly, they cannot be occupied after capture, since their retention requires massing.

Economy of force requires that in every action we move as swiftly as possible, with the least effort, to produce conditions that will put the enemy in a disadvantageous situation. We cannot permit him to develop his full capabilities.

Massed enemy forces must be attacked with mass-destruction weapons. However, the primary effect of such weapons will be to discourage his massing and permit us to defeat him in detail with our mobile forces. We cannot expect to be able to make the enemy mass. When he does, it will be as a result of his carelessness rather than our cleverness. He is not that stupid. If the enemy doesn't have our ground mobility, his best method of massing will be through infiltration of small units. These will attempt to rejoin

into massed forces at critical points. Such tactics offer us almost unimaginable opportunities for defeating him in detail.

Massing on the Battlefield

Successful operations, offensive or defensive, require a massing of forces. We can define a "critical density" on the modern battlefield as that density of forces constituting a profitable atomic target. Forces for offensive operations should be massed in time. Forces for defensive operations must be massed in space. When not moving, mechanized forces may be widely dispersed so as to achieve far less than critical density. Their mobility permits them to mass at any given place in a relatively short time. Thus, timewise, they are in effect massed. This is the method used by mechanized forces contemplating, but not actively engaged in, offensive operations. When moving, their density may be increased beyond a critical density without a comparable increase in risk. Mechanized forces that are not moving may be massed in space to a degree just short of a critical density. This is the method of massing when on the defensive. Defensive forces selected as a reserve are massed in time since they contemplate offensive action.

Mechanized forces are able to switch quickly between offensive and defensive operations as their tactical opportunities change and they can and should be concentrated in both time and space.

In the Attack

When attacking, we must seek first to isolate the enemy from his long-range fire support, his sources of supply and his link with the next higher echelon. Then we must turn fire and shock action against him. A type offensive action is illustrated in Figure 1. The gaps existing between enemy forces of less than critical density are chosen as avenues to the enemy rear. Our armor-protected

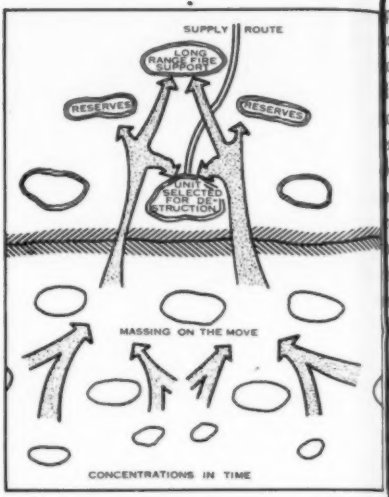


Figure 1. The Attack

firepower is rapidly massed while moving in order to reduce the risk of atomic counterattack. Then we drive deep behind his lines to those sensitive areas where physical isolation of his forward elements can be effected. This maneuver will seriously impede the ability of enemy forces under attack to continue effective action. It will block enemy reserves beyond the scene of action and it will place us in a position to make the assault from any direction.

After accomplishing the destruction of the enemy, our forces are preferably employed elsewhere. In any event, they must be withdrawn without consideration of area relinquished to the enemy.

The final phase of an attack is the Infantry's assault of the enemy position. Heretofore, the assault has usually been undertaken by overloaded doughboys worn out from marching and thinned out by artillery fire. The battlefield mobility of mechanized Infantry will change all this. The assault will now be characterized by its shock action.

Infantry shock action is a result of the

peed with which an overwhelming concentration of firepower can be brought to bear on the enemy from an unexpected direction. We must exploit the psychological effect of the disaster that threatens the enemy. Our fast, fierce use of superior firepower will create anxiety and panic. Whether he chooses to die or surrender is immaterial in relationship to our mission. However, his choice of surrender will materially reduce the effort required to destroy him as a fighting force.

Whenever possible, the frontal attack should be avoided. The advantages of attacking from an unexpected direction are obvious. At such points the enemy defenses are weakest. Heretofore, mass armies have been able to maintain protected flanks. The problem has been one of how to get around them. Lacking a direct solution to that, tacticians have tried penetrations followed by a change of direction. This was not an ideal solution, since the strength of the maneuver was dissipated in the penetration. However, in a war involving tactical atomic weapons, opponents are forced to disperse and a penetration in the gaps between enemy formations can be made by swift-moving mechanized forces.

When an enemy commander decides that one of his subordinate elements has been destroyed, he will consider use of atomic weapons against the forces that attacked it. It thus is imperative that we complete the destruction of a crumbling enemy element with minimum forces and then get out. We will then hit him somewhere else. Such use of our mobility will facilitate mopping-up operations by the smaller forces detailed for that job.

A static concentration of force should be attempted only in close proximity to the enemy. Though the enemy may far outnumber us, he will hesitate to destroy effective elements of his command in order to damage our forces. Hence, concentration in space beyond a critical density may be attempted without a comparable increase in risk when we are closely engaged with an enemy force. We have already stated that concentrations in space above a critical density may be achieved by mechanized forces while moving. Now we see they may be continued after being stopped by a collision with enemy forces. Defensive forces concentrated in space below a critical density may be reinforced beyond such a density after the enemy has closed.

In the Defense

Heretofore, the defense has been passive. This has left the attacker free to call his own tune. The attacker knew what he was doing and could, within limits, reasonably predict subsequent events. However, the defender was initially in the dark. Often he didn't recognize the attacker's intentions until it was too late.

When on the defensive, we should seek to dissipate the enemy's momentum, splinter his mass, destroy his control and divert his direction. Then, when his tactical advantages are lowest, we must isolate and destroy him. If exercise of the initiative is in favor of the attacker, time is against him. The moment an attack commences, it begins to lose its effectiveness. Momentum declines as men and machines tire and are lost. Formations begin to lose alinement, and fracture. Control and maintenance of direction become more difficult. An attack fails when a combination of these factors reduces the enemy's effort to less than that required for success. This emphasizes the importance of reserves, personal leadership and supporting fires delivered from a place of security.

The proper course of action for the defender is to increase the speed with which these factors take effect. Intrenchments will not increase our firepower differential sufficiently to insure success.

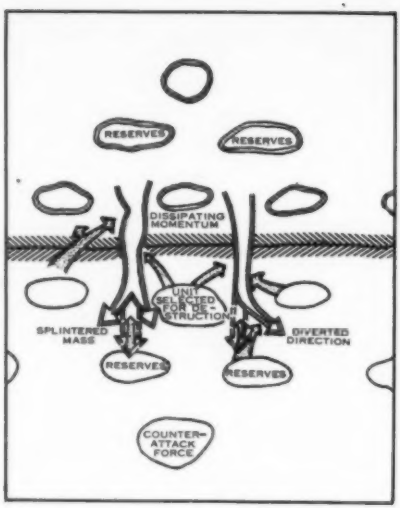


Figure 2. Phase 1 of the Defense

Figure 2 illustrates the first phase of a defensive operation. However, it is not enough that we repel his attack. Destruction of the enemy in every action is our primary mission. When his tactical strength has declined to no more than ours, we must swiftly isolate him from the rest of his command and destroy him. This second phase of the defense is illustrated in Figure 3.

Only the offensive promises decisive results of a continuing nature. Therefore, plans for every defensive operation should be based on the offensive action to follow. When the enemy attacks, he does not expect to be defeated. At the conclusion of an attack, whether successful or not, the enemy is in a state of confusion and disorganization. His entire command is keyed to the offensive and is poorly disposed to assume the defensive. This is the moment to seize the initiative and to counterattack.

A force should undertake a position defense only when it is part of a larger force engaged in a mobile defense. When the enemy greatly outnumbers us in strength, there is nothing to be gained from defending a position at all costs except the eventual reduction of our strength. If the enemy wants the position, he must take it by imposing a sheer weight of numbers. If it is necessary as part of the offensive plan of a larger force, a subordinate unit must hold its position at all costs.

Foot soldiers are most vulnerable while moving. They have no armor protection and their inherent mobility is the lowest on the modern battlefield. For this reason, their rapid movement is linked to established transportation routes and their ability to deploy when attacked is seriously limited. They offer excellent opportunities for attack when moving forward or to the rear and while employed as reserves. Their destruction will hamper the efforts of enemy armored forces which depend upon them for assistance and protection. Thus enemy Infantry becomes the priority target. When it has been destroyed in an

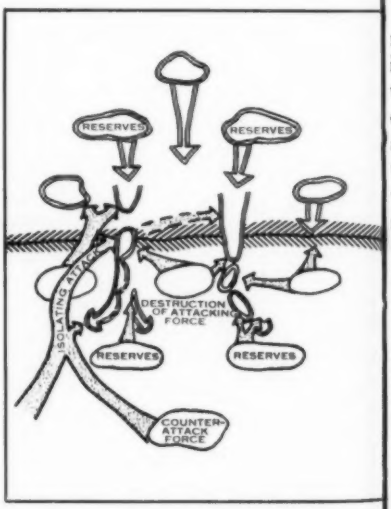


Figure 3. Phase 2 of the Defense

area, the enemy's armor may be successfully attacked.

Ruses and Stratagems

Use of ruses and stratagems must become routine. They must not fall into a pattern if they are to have continued effectiveness. The number and types of ruses available to the field commander are limited only by his imagination. With a flavor supplied by the particular circumstances, they fall roughly into six different categories or combinations thereof: failing to attack when expected; failing to defend when expected; attacking when expected to defend; defending when expected to attack; attacking unexpectedly; and defending unexpectedly. The opportunities for employing ruses and stratagems are fleeting. They require the existence of a great degree of decentralized control coupled with keen minds and courageous hearts. Actions of this type use mobility to achieve tactical surprise in order to offset a relatively inferior mass. When successfully applied they result in the most remunerative and decisive results.

Fast-moving, long-ranging light cavalry should be the chief source of battlefield intelligence. Intelligence processes for a war of movement must be extremely quick and simple. They can require only a minimum of correlation and interpretation. The speed and distance encountered on the modern battlefield have moved the point of intelligence interest far behind the enemy's front lines. The primary collection method will be surveillance. The collecting agency must be swift light cavalry designed for reconnaissance missions only. Screening and security missions can be performed by mechanized forces themselves. Light cavalry must move on the ground and in the air. It must have speed, range and adequate communications.

In general outline, this is a concept for the future employment of Infantry forces; a concept which recognizes the strength of potential enemies on the ground and the need to avoid a war of attrition; one that sees tactical atomic weapons as a force determining the conditions of the battlefield, rather than as a means for achieving decisive results; a concept which uses the mobility of mechanized forces to increase our strength and defeat the enemy in detail with nonatomic weapons. No attempt has been made in this limited space to relate the concept to the future use of armored or airborne forces.

The chances are that you won't agree with everything you have just read. If you did, I have failed in my purpose. If there is disagreement in your mind, I hope it is because you are thinking. Don't stop thinking. As long as we keep thinking we'll be ahead of the enemy and able to defeat him if he decides to take the chance—a long chance against very poor odds.

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Maj Roderick A. Stamey, Jr entered the army as a private in 1942, after graduating from the Rice Institute with a BA degree. He was commissioned in 1943. He served with the 42d Infantry Division during World War II in the ZI and in two campaigns overseas. In 1949, he accepted an RA commission in the Infantry and in 1951 joined the 4th Infantry Division in Germany to serve as a company commander. He graduated from the Advanced Course at The Infantry School in 1953 and then was assigned to the Combat Developments Office at The Infantry School. Recently, he was ordered to the Far East Command.

QUIZ

Answer the following questions to determine whether you are a bolo, recruit, marksman, sharpshooter or expert. Each question is worth 10 points.

1. One of the purposes of the Officer Efficiency Report is to (select one):
   a. Provide local commanders with information with which to assign replacement officers.
   b. Provide immediate supervisors with an aid for counseling subordinates for an improved performance.
   c. Furnish Department of the Army with information necessary for efficient utilization and assignment of individual officers.
   d. Furnish Department of the Army and all intermediate commands with information necessary for efficient utilization and assignment of individual officers.

2. As a platoon leader you are training your squads in the technique of engaging linear targets. In which of the following ways should you teach your squad leaders to employ the automatic riflemen?
   a. Hold their fire for surprise targets.
   b. Engage the target, each distributing his fire over the entire target.
   c. Engage the target, each distributing his fire over one half of the target, overlapping at the center of the target.
   d. Hold one of them in reserve, to be used as a base of fire when the squad moves forward.

3. A machinegun located in position defilade has been properly laid to hit the target but mask clearance of a mask less than 300 yards away is not obvious. To check for mask clearance, the gunner must (select one):
   a. Bore sight on the mask.
   b. Depress the muzzle two mils and check for mask clearance.
   c. Elevate the muzzle two mils and check for mask clearance.
   d. Depress the muzzle until the line of aim falls on the mask, then depress two additional mils and check for mask clearance.

4. A commander, upon checking the quality of his organization's preventive maintenance, finds that the engine oil in some of his vehicles is "black as tar." Is he justified in "gigging" the persons responsible for the PM services?

5. The best way to develop responsibility in your subordinates is to (select one):
   a. Tell them how to do their jobs.
   b. Do the job yourself when it isn't done right, thus setting a proper example for your subordinates.
   c. Leave them alone to accomplish the job on their own.
   d. Delegate authority to them and supervise the job they do.

6. The sequence of planning for an airborne operation is (select one):
   a. Tactical plan, landing plan, air-movement plan, marshalling plan.
   b. Marshalling plan, air-movement plan, landing plan, tactical plan.
   c. Landing plan, tactical plan, marshalling plan, air-movement plan.

7. In deciding what formation is best for your patrol what are five factors which must be considered?

8. What are two of the most common causes of radio failure in the field?

9. Loading, lashing and unloading of accompanying supplies and equipment on cargo aircraft is the responsibility of (select one):
   a. Crew of the aircraft.
   b. Aerial Port Commander.
   c. Unit being transported.
   d. Communications zone commander.

10. Subsequent fire commands for an 81mm mortar platoon include only those elements which are changed, with the exception of one element which is always announced. This element is (select one):
   a. Mortars to fire.
   b. Deflection.
   c. Elevation.
   d. Charge.

For answers see page 68

RAZOR SHARP

Every article in the ISQ is razor sharp and clear cut. Our editors scrape away excess verbiage and nonessential items to bring you solid, down-to-earth articles that keep you well informed. For your subscription, write: Chief, Circulation Section, The Infantry School Quarterly, The Infantry School, Fort Benning, Georgia.

RECONNAISSANCE and

ECURITY within the BATTALION

THE INFANTRY BATTALION CAN PROVIDE THE ADDITIONAL RECONNAISSANCE AND SECURITY IT WILL NEED IN FUTURE COMBAT.

Mobility, dispersion and rapid concentration of forces, the characteristics of future warfare, will present problems for the Infantry commander. One of the most difficult of these problems will be reconnaissance and security in both offensive and defensive operations.

To operate on an "atomic battlefield," we must have additional reconnaissance and security units within the Infantry regiment. While it is possible these may be included in new organizations that are being developed for future combat, they may be years away. If war were to start tomorrow, we would be forced to fight, at least initially, with what we have.

The intelligence and reconnaissance platoon is the only unit specially designed

By Capt Donald F. Bletz

to perform the Infantry regiment's reconnaissance mission. It would not be able to perform all the reconnaissance and security missions required in the type of warfare we can expect. The I&R platoon simply does not have the manpower or the firepower to do a larger job. What we need is a temporary, stopgap measure designed to carry part of the load.

We can provide a temporary solution by organizing a security unit within each Infantry battalion. The heavy weapons company has the personnel, weapons, transportation and, to a limited degree, the communications needed by such a unit.

A suggested organization for this unit, which might be called the Reconnaissance and Security Platoon, is patterned after the reconnaissance platoon of the airborne reconnaissance company. (See Figure 1, page 66) Each heavy weapons company is capable of organizing one such platoon. By deleting certain units from the proposed organization, each company probably could place two of these platoons in the field.

From what units in the heavy weapons company can we draw the necessary personnel and equipment?

1. *Platoon Headquarters:* The platoon leader may be any one of the heavy weapons officers, except the company commander. Any one of the company's platoons may give up its platoon sergeant for a similar position in the R&S platoon. The light truck driver, the radio-telephone operator and the necessary equipment can be supplied by the heavy weapons company headquarters.

2. *Scout Squad:* The scout squad will be composed of one of the squads of the machinegun section and commanded by the leader of the section. The assistant scout squad leader becomes the leader of the first machinegun squad.

Two ¼-ton trucks come from the machinegun section and one light and one heavy machinegun are supplied by the first machinegun squad. Two AN/PRC 10 radios come from the antitank platoon.

3. *Rifle Squad:* The machinegun section's second squad becomes the R&S platoon's rifle squad. It is organized like the

normal rifle squad with one exception: instead of using two BAR's, the squad utilizes its organic light machinegun. The antitank platoon headquarters gives up a ¾-ton truck and a driver to the new rifle squad. For this squad, the required AN/PRC 10 radio comes from the 81mm mortar platoon.

4. *Antitank Section:* To fill its requirements in this field, the R&S platoon takes a complete AT section from the antitank platoon.

5. *Support Squad:* A complete mortar squad of the mortar platoon, supplemented by an additional ¼-ton truck and an AN/PRC 10 radio from the mortar section, makes up the support squad.

This suggested breakdown is only one of many combinations that could produce the desired results. The exact breakdown depends on the status and personalities involved in a particular heavy weapons company.

How does this proposed organization affect the operation of the heavy weapons company? We have reduced the effectiveness of the company a bit more than one-third. However, we still have an effective company headquarters. The machinegun platoon retains its platoon headquarters and one machinegun section. The antitank platoon has lost one of three sections, plus two AN/PRC 10 radios and a ¾-ton truck, and the mortar platoon has lost the use of one of its mortar squads. Before jumping to the conclusion that this one-third reduction in the effectiveness of the heavy weapons company far outweighs any other considerations, we must examine how this suggested platoon can be employed to advantage as a reconnaissance and security unit.

The R&S platoon's basic tactics and techniques are the same as those prescribed for the platoons of the reconnaissance company. The methods by which this platoon will accomplish its missions are similar to those of the I&R platoon of the Infantry regiment—that is, to operate as a security unit, to maintain contact and to patrol.

Offense

1. *Movement to Contact:* The platoon operates as a security unit to the front, flank or rear of the column, or maintains contact with friendly units to the front, flanks or rear.

2. *Coordinated attack:* Here, the R&S platoon normally reverts to its primary role with the heavy weapons company. It is unrealistic to assume that in a normal attack approximately one-third of a heavy weapons company would be diverted from its fire support role to function in any other capacity. However, if the situation should require a reconnaissance and security unit, and none were available, the battalion commander would have the capability to organize and employ one.

PROVISIONAL RECONNAISSANCE AND SECURITY PLATOON

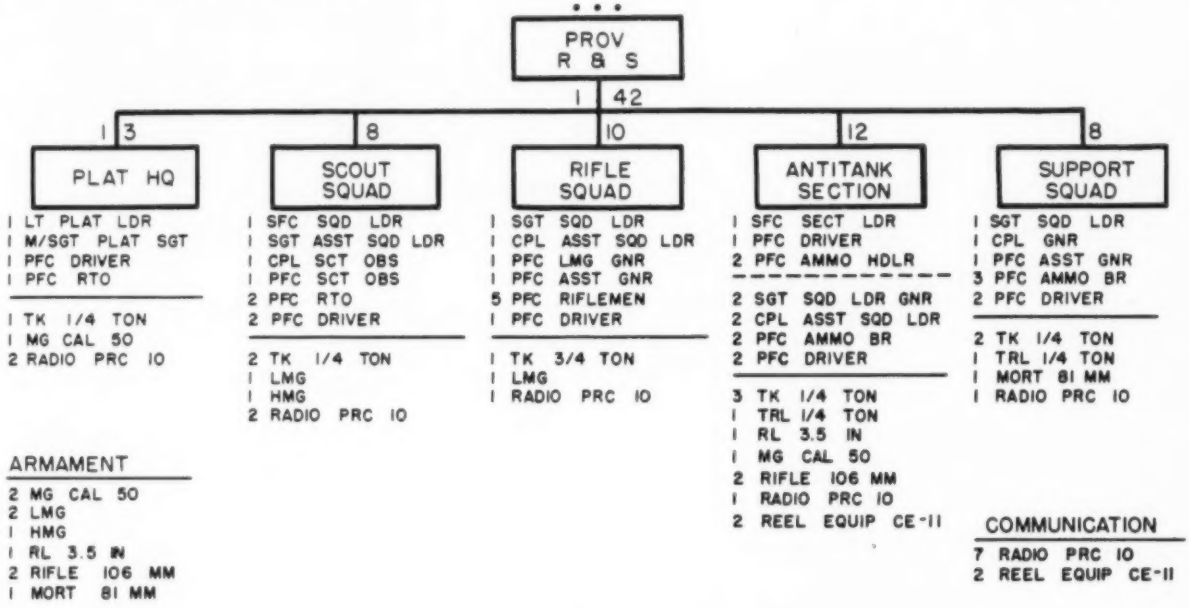


FIGURE 1

3. *Pursuit:* In this operation, the R&S platoon gains and maintains contact with the enemy, secures dangerous flanks and maintains contact with friendly forces.

Defense

1. *Position defense:* In a position defense on either a wide or a desirable front, the R&S platoon is employed first in its normal role with the heavy weapons company. If time permits, and the weapons have been meshed into the coordinated fire plan and the positions prepared, the R&S platoon can be organized to perform reconnaissance and security missions. Employment of the platoon in position defense is similar to that prescribed for the I&R platoon, except that the R&S platoon can fight limited delaying actions because of its mobility and heavy firepower. When the combat outpost line comes under attack, the platoon reverts to the control of the heavy weapons company commander and takes its place in the battalion battle position.

2. *Mobile defense:* The R&S platoon probably will be used most frequently in mobile defense. Each battalion that occupies a strongpoint in the mobile defense system is assigned an area of surveillance surrounding the strongpoint. The battalion commander will find his organic reconnaissance and security unit ideal to assist in this surveillance mission. As in the position defense, the primary mission of the heavy weapons company is to implement the coordinated fire plan. When the strongpoint comes under attack, the R&S platoon withdraws and reverts to its primary role in defense of the strongpoint.

3. *Retrograde:* In a retrograde movement, the platoon can be used to maintain contact with the enemy and fight limited delaying actions. It can also be used to maintain contact with adjacent units and as a security unit to the front, flanks or rear of the battalion.

Training

Most of the training for the R&S platoon can be concurrent. All movements to or from training areas offer opportunities for the platoon to train in the basic techniques of movement and communication. A battalion foot or motor march offers situations for training the platoon to operate as a security unit to the front, flanks or rear of the column. Battalion field exercises also provide fertile training situations for the platoon.

Capabilities and Limitations

The platoon, as proposed, has certain limitations that cannot be overlooked. The most serious of these limitations is that in a majority of situations, as noted previously, the reconnaissance and security duties of the R&S platoon will necessarily take second priority to the primary mission of the heavy weapons company.

The platoon is also limited to an operating range of five miles because the AN/PRC 10 radio, the only radio available within the heavy weapons company, has a maximum effective range of five miles.

On the other side of the ledger, the proposed platoon will be invested with a high degree of mobility and a heavy firepower capability. The R&S platoon can cover a great deal of ground, conduct reconnaissance and engage in limited combat. Since one of these proposed platoons would be available to each battalion commander, the total capabilities far exceed those of the I&R platoon.

The major advantage offered by the R&S platoon is that it is readily available to the battalion commander since it is organic to the battalion. Under the present organization, there are not enough reconnaissance regiments, battalions, companies or platoons. With the adoption of the R&S platoon, the battalion commander would have his own organic unit.

The creation of an R&S platoon is only a stopgap measure. A complete solution rests in the inclusion of strong reconnaissance and security units within the Table of Organization of each Infantry regiment or battalion. If we are to keep pace with modern warfare, we must provide the battalion commander with the opportunity of having a unit to perform reconnaissance and security duties. If a war were to start tomorrow, we would not have this R&S capability. We need a stopgap measure. We need it now.

CAPT DONALD F. BLETZ enlisted in the army in 1943, fought with the 353d Infantry in WW II and was commissioned in 1946. He served with the 88th Division and later, the 350th Infantry in Italy. After taking the Airborne Course at TIS, he went to Trieste. He then served with the 11th Airborne Division at Ft. Campbell. In 1954, he attended the Advanced Course at TIS and is now an instructor in the Tactical Department.

Answers to . . . QUIZ

Possible score 100 points, Expert 90-100, Sharpshooter 70-80, Marksman 50-60, Recruit 30-40, and Bolo 0-20. For complete detailed discussion of the answers check the references.

1. c. The Officer Efficiency Report provides the Department of the Army with information on an officer's effectiveness in his current assignment. It serves two primary purposes—

   (1) Provides a measure of an officer's over-all value to the service to be used with other information as a basis for such personnel actions as promotion and separation.

   (2) Furnishes information necessary for efficient utilization and assignment of individual officers. (Par. 2 (1) (2), Section I, SR 600-185-1, September 1953.)

2. b. The automatic rifleman distributes his fire over the entire area, or on any specific target where his fire will best support the advance of the squad. (Par. 230 (2), FM 23-5, C1, October 1951.)

3. b. When the range to the mask is not more than 300 yards, *mask clearance will exist* when the axis of the bore is elevated 2 mils or more above the line gun-mask. *Mask clearance can be checked,* after the gun has been laid on the target by depressing the muzzle of the gun 2 mils and sighting along the lower edge of the water jacket (heavy gun) or the right side of the barrel jacket (light guns), in line with the axis of the bore. If the sight clears the mask, mask clearance exists.

   A more accurate check is obtained by removing the back plate and the bolt, depressing the muzzle 2 mils and sighting through the bore. (Par. 207b and Par. 207 b (2), FM 23-55, July 1945.)

4. Not until he has checked for grit, water or gasoline in the oil. The *color* of the oil is no criterion for determining its condition. High detergent oil (used in all military vehicles) contains

a chemical additive which dissolves the gum and varnish and holds them in suspension. This is why the oil turns black almost immediately after it is placed in the crankcase. If the oil contains grit, water or gasoline, or any combination of these, then a "gig" is in order. (TM 9-2835, Page 38, May 1949.)

5. d. If a man is to develop a sense of responsibility, he must gain confidence in his own ability to cope with problems and he must recognize that his efforts are important to the welfare of his group. The man must therefore fight and win his own battles, but at the same time he must know that his leaders are interested in what he is doing and are ready to help if necessary.

6. a. The orderly development of a plan for an airborne operation is based upon backward planning commencing in the objective area and progressing in sequence: tactical plan, landing plan, air-movement plan and marshalling plan. Each plan in turn is based upon the preceding one and contributes to the ultimate aim of placing elements of the airborne force in the airhead at the time and place necessary to accomplish the mission. (Par. 26b, FM 57-30, January 1952.)

7. Actually there are eleven factors which should be considered when making the decision. Score yourself a possible on this question if you picked any five of the following:

(1) Mission
(2) Terrain
(3) Visibility
(4) Weather
(5) Enemy Situation
(6) Control
(7) Speed of movement
(8) Security
(9) Dispersion
(10) Stealth
(11) Size of patrol

(Par. 185, FM 21-75, October 1950.)

8. 1. Faulty power source.
2. Poor cable connections.

(Par. 46b, TM 11-612/to 31 R2-2PRC-101, December 1954.)

9. c. Airborne forces are responsible for loading troops, accompanying supplies and equipment. (Par. 38b (1) (b), Page 49, FM 57-30, January 1952.) Army units are responsible for enplaning, loading and lashing their accompanying supplies and equipment under supervision of the troop carrier representative. The pilot of the aircraft has the final decision on matters affecting his aircraft. Loading of each aircraft is performed as far as practical by the aircraft's passengers. Air crews are not required to, but may, assist in loading. (Par. 74e, Chapter 3, Section III, Page 79, FM 57-30, January 1952.)

10. c. The elements of a subsequent fire command are given in the same order as the initial fire command. Subsequent fire commands include only those elements which are changed, with the exception of the elevation element which is always announced. (Par. 22, DA TC 21, August 1954.)

how would YOU do it?

By CAPT SHERMAN F. CARTER

Read the situation, study the map and see if you come up with Captain Carter's solutions.

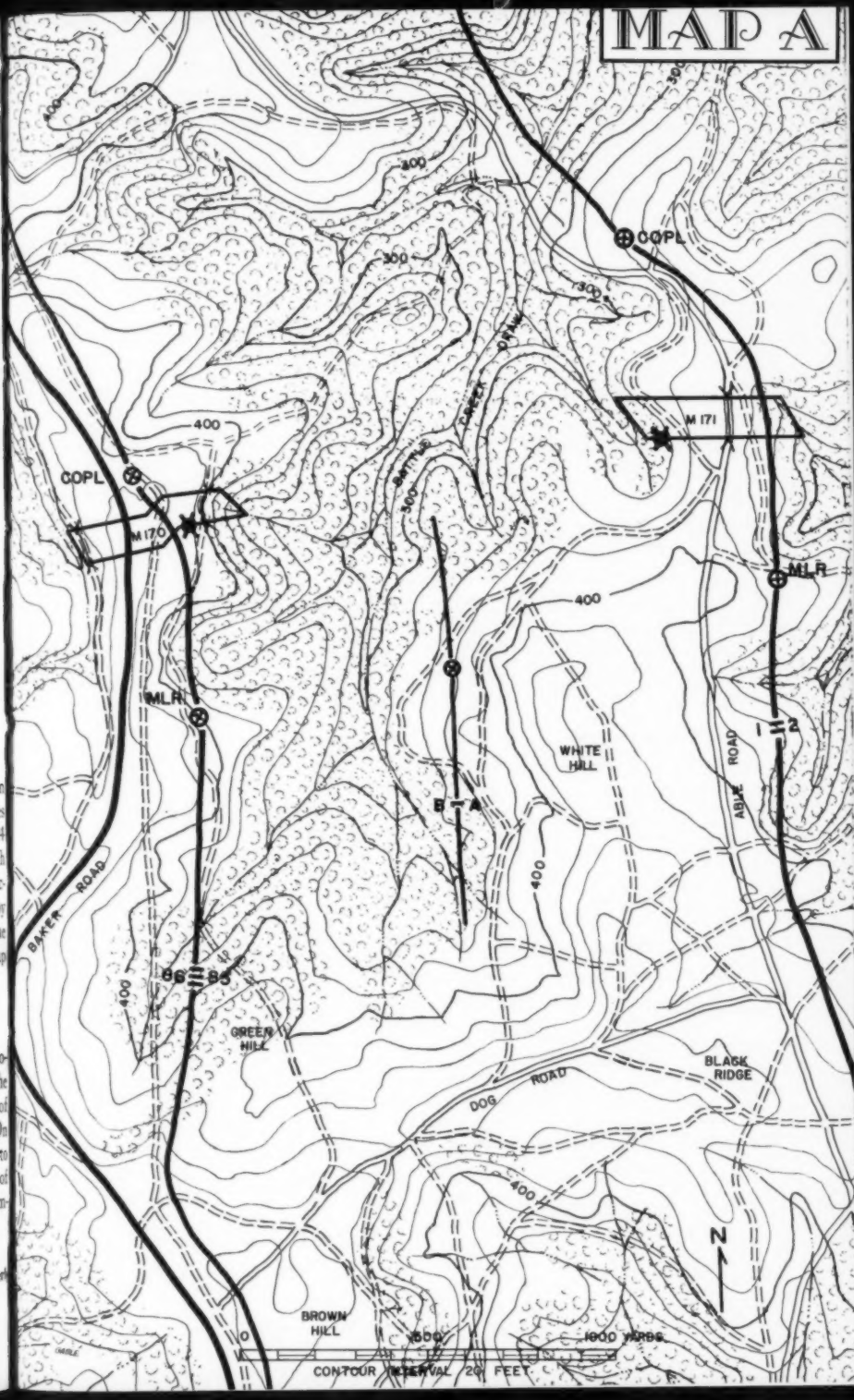
Situation

It is 0900. Early this morning, enemy Infantry and Armor crossed the RED River to the front of the 10th Infantry Division (approximately 5 miles north of the portion of the main line of resistance shown on Map A). The enemy has air superiority in this area and is preparing to continue his attack southward. All elements of the US V Corps Covering Force have been withdrawn south of the river. Both US and Aggressor Forces have the ability to employ atomic weapons tactically; however, no such weapons have been used to date.

The general outpost, composed of elements of the 87th Infantry, reinforced, is disposed immediately south of the RED River. The mission of the general outpost is to hold the enemy north of an east-west line (approximately 3 miles north of the MLR) for the next 24 hours. Elements of the 85th and 86th Infantry Regiments will complete the occupation of the combat outpost line by 1300 today. (The general trace of the combat outpost line is indicated on Map A.)

First Requirement

Determine the most suitable composition and disposition of strength for the portion of the combat outpost in front of the 1st Battalion, 85th Infantry. On Map A, plot the outguard positions to comprise the combat outpost in front of the 1st Battalion and indicate the composition of each outguard position.


MAP A
COPL
COPL
M 171
M 170
MLR
MLR
BATTLE CREEK DRAW
WHITE HILL
ABLE ROAD
B — A
BAKER ROAD
GREER HILL
DOG ROAD
BLACK RIDGE
BROWN HILL
N
0
1000
1000 YARDS
CONTOUR INTERVAL 20 FEET

Situation *(Continued)*

First Battalion, 85th Infantry with 1st platoon, regimental tank company, attached, has been assigned an area to organize, occupy and defend (see Map A). Engineer support is available upon request. (Note the locations of minefields now being installed by the division engineers.)

The commanding officer of the 1st Battalion has decided to employ Companies A and B forward and Company C in reserve. Two heavy mortar barrages and an artillery barrage have been allocated to the battalion. The locations for these barrages have not yet been established.

You are now Captain, Company C. Here is an extract from your battalion commander's defense order which applies to your company:

"Company C will organize and defend the north slope of DOG ROAD Ridge and will also prepare a supplementary platoon position or positions to protect the rear, east (right) flank of the battalion."

Second Requirement

Draw the appropriate symbols on Map A to show your plans for the defense of the reserve company area to include the following:

a. Location of primary positions for your platoons.
b. Location of the supplementary platoon position or positions.
c. Location of the company command post and observation post.
d. Location of the three 57mm rifles and the three 60mm mortars.
e. Defense of the reserve company area against infiltration.

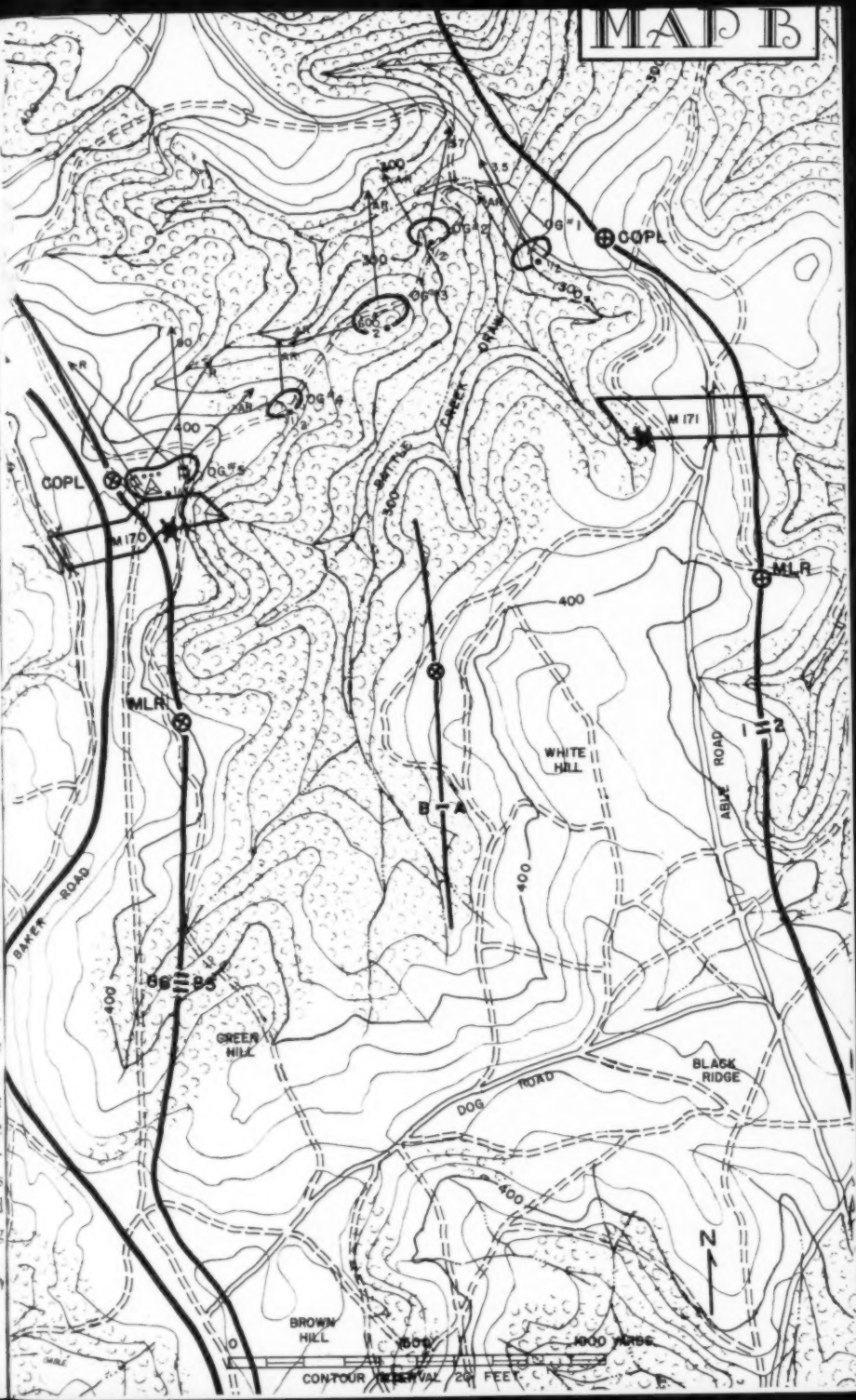
Solution To First Requirement

The commanding officer of the 85th Infantry Regiment chose to attach one reinforced rifle platoon from the reserve battalion (the 3d Battalion) and one sec tion of two tanks from the regimenta tank company to the 1st Battalion for use on the portion of the combat outpost in front of the 1st Battalion (see Map B).

The enemy's ability to employ atomi weapons tactically had no direct effect o the commander's decision, since securit echelons forward of the battle positi will seldom be remunerative targets fo such weapons. Artillery and the reserve of larger organizations are more vulner able.

Front-line regimental commanders a responsible for the combat outpost; how ever, the division commander may desig nate the general trace of the combat out post line. The regimental defense orde includes instructions pertaining to th strength of the combat outpost and t battalions responsible for its organiza tion. Usually, front-line battalions ar directed to control the portion of th combat outpost in front of their respec tive defensive areas. This facilitates fir control and coordination of movement immediately forward of the battle posi tion. When a front-line battalion estab lishes a portion of the combat outpost, draws the necessary men and equipmer from the battalion's reserve. Elements of the reserve battalion may be attached to a front-line battalion for use on the com bat outpost line when (1) there is insuf ficient time for the front-line battalion to prepare its portion of the battle posi tion and the positions on the combat out post line (as in this case), or (2) when the strength required on the combat out post line would seriously deplete the front-line battalions.

The primary mission of the combat outpost is to provide early warning of the enemy and to deny him close ground ob servation of the battle position. It has the additional missions of delaying and disorganizing the enemy and deceiving


MAP B
COPL
COPL
MLR
MLR
MLR
M 171
M 170
BATTLE CREEK DRAIN
WHITE HILL
B — A
ABLE ROAD
BAKER ROAD
DOG ROAD
GREEN HILL
BLACK RIDGE
BROWN HILL
BS — BS
OG #1
OG #2
OG #3
OG #4
OG #5
400
300
N
CONTOUR INTERVAL 20 FEET

him as to the true location of the battle position.

In most cases, the combat outpost line is located on the first series of dominant terrain features forward of the battle position. Whenever possible, it should be located about 800 to 2000 yards in front of the forward edge of the battle position. This location permits the combat outpost to enjoy the support of weapons located within the area of the front-line battalions. At the same time, it denies the enemy close ground observation of the battle position and makes it difficult for him to place effective direct fire on elements of the front-line battalions.

The strength of the combat outpost forward of each front-line battalion may vary from a rifle platoon to a reinforced rifle company. The regimental intelligence and reconnaissance platoon may operate initially under regimental control forward of the combat outpost line to maintain contact with the general outpost. After the general outpost withdraws, one squad of the intelligence and reconnaissance platoon is usually attached to each front-line battalion for use on the combat outpost. Artillery and mortar observers are positioned on the combat outpost line.

The combat outpost is organized into a series of outguard positions which vary in strength from one-half squad to a reinforced rifle platoon. (See Map B.) It is preferable to locate outguard positions within visual communicating distance of each other. Listening posts between outguards should be set up for use at night. It also may be necessary to patrol between widely separated outguards. During periods of poor visibility, patrolling should be increased and security on the combat outpost line augmented. The outpost commander maintains contact with his battalion commander, outguards and with adjacent outpost commanders by using wire, radio, messengers, visual and sound signals.

Solution To Second Requirement

a. Location of the primary platoon positions. (See Map C.)

The 1st platoon's position can be organized on the north slope of BROWN Hill to block the BATTLE CREEK Draw-GREEN Hill approach. Based on a map study, you might select GREEN Hill as a location for the 1st platoon; however, observation and fields of fire from GREEN Hill do not match those from BROWN Hill. A position on BROWN Hill also facilitates mutual support with the platoon to the east and best protects the most critical terrain in the battalion area.

The primary squad positions of the 2d platoon should dominate the eastern branches of BATTLE CREEK Draw. The supplementary squad positions are south of DOG Road. The 3d platoon is located to fire into BATTLE CREEK Draw or upon ABLE Road. The position of this platoon would also block an enemy penetration from the direction of WHITE Hill.

The reserve company's portion of the battalion defensive area usually extends laterally across the battalion area from the rear of the boundary between the front-line companies to the end of the battalion boundary. Rifle platoons of the reserve company are disposed laterally across this area on the best defensible terrain. When designating the area to be organized by the reserve company, the battalion commander may point out specific terrain features for positions and establish priorities for the preparation of positions. Based on the battalion order and thorough reconnaissance, the reserve company commander indicates the exact area each platoon will organize and occupy. He coordinates his plans with those of the front-line companies, supporting units and installations in the battalion rear.

The platoons of the reserve company

MAP C
COPL
COPL
M 171
M 170
MLR
MLR
BATTLE CREEK DRAW
WHITE HILL
B - A
ABLE ROAD
BAKER ROAD
PATROL ROUTE
PATROL ROUTE
PATROL ROUTE
GREEN HILL
BLACK RIDGE
DOG ROAD
BROWN HILL
N
0
500
1000 YARDS
CONTOUR INTERVAL 20 FEET

should make maximum use of all natural and artificial obstacles located within and forward of their respective areas. If the terrain permits, the primary platoon positions should be located within supporting distance of the reserve platoons of the front-line companies. However, these positions should be at least 150 yards from the rear of the reserves of the front-line companies so that they are outside the zone of dispersion of enemy fire directed at the front-line companies. The primary positions of the rifle platoons are organized with all three rifle squads on line and with squad supplementary positions wherever necessary. The reserve company occupies its primary positions until required to move to one or more of the supplementary positions or to participate in a counterattack.

b. Locations of the supplementary platoon position.

One supplementary platoon position (See Map C) is sufficient to protect the rear and east flank of the battalion. Any combination of primary and supplementary squad positions within this platoon position could be occupied as dictated by the situation. Any of the three rifle platoons of the reserve company could be ordered to occupy this position. Supplementary platoon positions might also be prepared on the east or west slope of BROWN Hill. The southern slope of this hill is outside the 1st Battalion's area.

Frequently, the reserve company cannot protect the flanks and rear of the battalion from its primary positions; therefore, after the primary positions are prepared, the reserve company establishes supplementary platoon positions in accordance with the priorities prescribed by the battalion commander. There will be as many supplementary positions for the platoons of the reserve company as necessary to guard the flanks and rear of the battalion. If the battalion has an unprotected flank, elements of the reserve company may be disposed to protect it.

c. Location of the company command post and observation post.

A location south of DOG Road in rear of the 2d platoon area is best for the company command post. This area is in defilade and centrally located. It also provides hard standing, cover and concealment as well as an adequate trail net. Other locations south of DOG Road might also be used for a command post. The battalion, reserve company and heavy weapons company command posts are usually located in the same general area—behind the primary positions of the reserve company. This facilitates communication and security.

The company observation post should be located on the high ground in the western part of the 2d platoon's position. This location offers fine observation into BATTLE CREEK Draw to the north of WHITE Hill and is centrally located. It is not possible to observe both ABLE Road and BATTLE CREEK Draw from any one position in the platoon area located farthest to the east. The reserve company commander establishes one or more observation posts, depending upon the terrain, within or near the platoon positions of the reserve company for security reasons. Observation posts are located in coordination with battalion observation posts to permit maximum observation to the front, flanks and rear of the battalion area and to avoid unnecessary duplication of observation sectors.

d. Location of the 57mm rifles and 60mm mortars.

In this situation, the 57mm rifle located in the 1st platoon's area was assigned a principal direction and sector of fire covering the GREEN Hill approach. The two other 57mm rifles cover the eastern branch of BATTLE CREEK Draw. Usually, one 57mm rifle is em-

ployed in each rifle platoon area under company control. The company commander assigns principal directions and sectors of fire, primary and supplementary positions and prescribes conditions under which these weapons may begin firing or move to supplementary positions. He also retains responsibility for ammunition supply and prescribes control measures affecting ammunition expenditure. These weapons are positioned so that they fit effectively into the fire plan and cover enemy foot approaches into the area.

The 60mm mortars were located in a section position in rear of the 2d platoon. From this position, the mortars can accomplish any mission expected of them. They are centrally located, in defilade and their location offers cover, concealment and supply routes. A position south of the eastern part of BLACK Ridge could also be used. Whenever feasible, the mortars of the reserve company are employed in a section position in or near a primary platoon position. Frequently, the 60mm mortars of the reserve company are located near the 81mm mortar platoon of the battalion heavy weapons company. By taking advantage of the communication facilities and observers of the 81mm mortars, the 60mm mortars of the reserve company are able to fire concentrations forward of the main line of resistance. If the terrain limits the effective use of mortars from a section position, the section can be split and the mortars employed singly in or near the rifle platoon positions.

e. Defense of the reserve company against infiltration. (See Map C.)

At least three listening posts would be established to be manned during poor visibility and patrols would also be used. Patrol routes should be varied frequently.

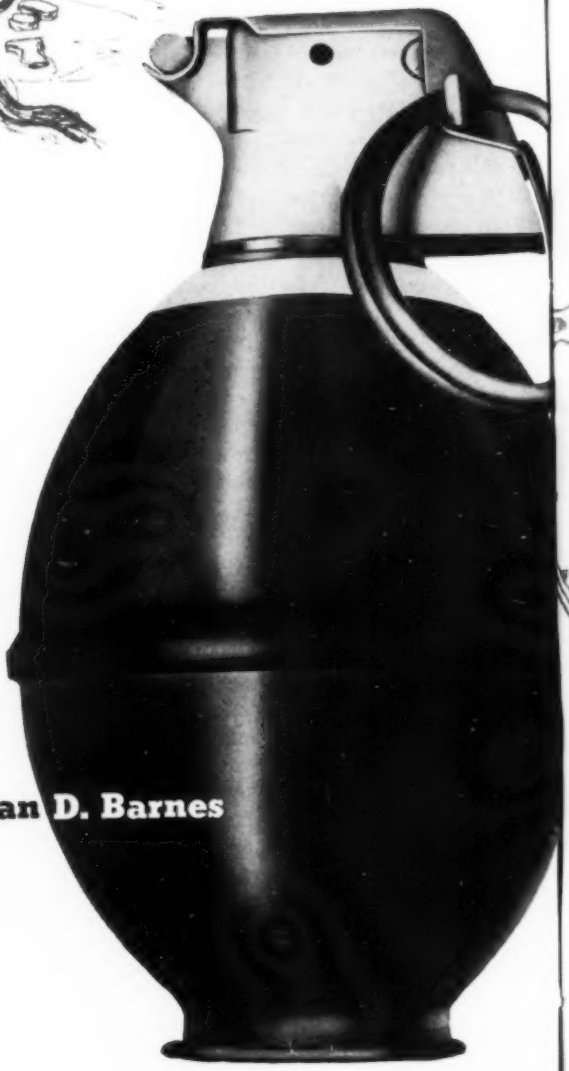
Like any other unit, the reserve company is responsible for its own security. In many situations, the reserve company will be assigned special patrol and security missions in addition to those required for its own protection.

CAPT SHERMAN F. CARTER came into the army in 1945 and received a commission upon graduation from Officer Candidate School a year later. He served with the 188th Parachute Infantry Regiment in Japan from 1947 until 1949 and then returned to the United States to command the 11th Airborne Division Military Police Company. He was assigned to the 511th Airborne Infantry Regiment in 1951. In Korea, he served as a company commander in the 27th Infantry Regiment and in the G3 Section of the 25th Infantry Division. He then returned to the United States to become a battalion S4 in the 508th Airborne Regimental Combat Team at Fort Benning. In 1953, he attended the Advanced Course at The Infantry School and upon graduation he began his present assignment as an instructor in the Tactical Department.

In the air, on the sea and over the ground, the Infantry rifleman must take the final decision. He must destroy the enemy or drive him off the battlefield.

GENERAL GEORGE C. MARSHALL

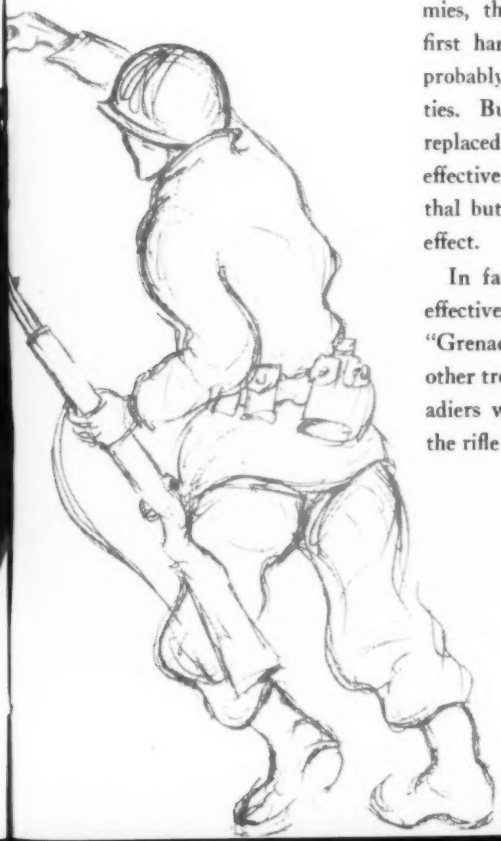
SNAKEPOT$



By Lt Wilman D. Barnes

TO BASEBALLS

This article brings us up to date on the new grenades, pyrotechnics, safety regulations and training notes which have been developed since 1949 when Field Manual 23-30, "Hand and Rifle Grenades" was last published.—Editor



When the ancient Chinese threw earthen pots full of snakes and scorpions into the camps of their enemies, they actually were throwing the first hand grenades. These "grenades" probably caused more panic than casualties. But later, when the snakes were replaced by gunpowder, they were more effective. Grenades were then more lethal but lost none of their demoralizing effect.

In fact, the hand grenade became so effective that the French formed special "Grenadier" units to advance in front of other troops as elite assault forces. Grenadiers were successful until accuracy of the rifle was improved. Casualties among

Figure 1. M26 Fragmentation Hand Grenade

Grenadiers ultimately were so great that few special Grenadier units were used after the Napoleonic Wars.

During the American Civil War, the soldier began to realize the advantages of cover and concealment. The grenade again was important as an effective weapon because it could reach an enemy in a defiladed position. The grenades used in that time, however, had very undependable fuzes. It was not until the siege of Port Arthur in 1904, during the Russo-Japanese War, that the Japanese introduced grenades with automatic fuzes. But they, too, were far from perfect, since the fuze was open and easily extinguished.

The next important development came in World War I when the Germans introduced their famous "Potato Masher" —a grenade with a dependable time fuze. The British countered this weapon with their "Mills Bomb" and we developed our own fragmentation hand grenade, the Mark I, which was similar to the British type.

During World War II, many types of grenades, both hand and rifle, were developed. We had a number of types which were designed to meet the varied conditions of terrain, climate and tactical situations. One of these was the Mark II fragmentation grenade.

Since FM 23-30, "Hand and Rifle Grenades," was published in 1949, there have been a number of important developments in our family of grenades.

Hand Grenades

The outstanding development in the field of hand grenades is the M26 Fragmentation Hand Grenade, sometimes called the "Baseball" grenade because of its smooth and rounded body (Figure 1). It is now a standard item of issue. Although it weighs only one pound, five ounces (23.8% less than the Mark II Fragmentation Hand Grenade) it has an effective casualty radius[1] of 15 yards, as opposed to 10 yards for the Mark II.

The fragmentation effect from the M26 is provided by the internal construction of the grenade, *which is still classified information*. It can be said, however, that the M26 provides a great increase in the number of lethal fragments, which are smaller and travel at greater velocities. This grenade was used in the latter stages of the Korean conflict and battle reports indicate that it was an unqualified success. A practice version of the M26 containing a reduced charge, is the M30 Practice Grenade. The Mark II Fragmentation Hand Grenade is still avai-

[1]The term *"effective casualty radius"* is defined as *that radius of a circle around the point of detonation in which fifty percent or more of all personnel in the open will become casualties.*

able as a limited standard item for training purposes.

An improvement in our offensive grenades is the Mark IIIA2 (Figure 2). This grenade contains slightly more than half the TNT of its predecessor, the Mark IIIA1, but is just as effective. It has a body of impregnated asphalt and the metal top and bottom, formerly common to offensive grenades, have been eliminated.

Figure 2. Mark IIIA2 Offensive Hand Grenade

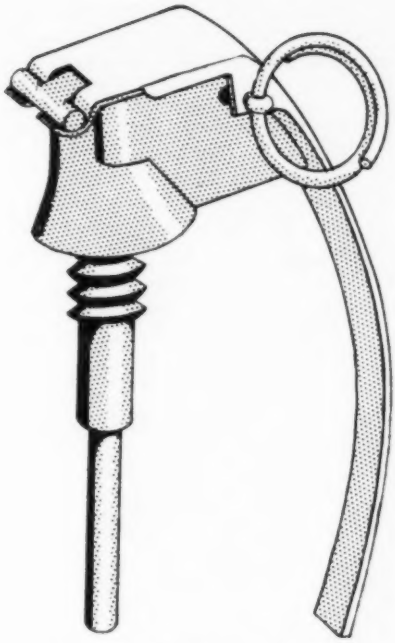


Figure 3. "T-Lug" Fuze Assembly

Fuzes

Along with the development of newer and more effective grenades, we have improved our grenade fuzes. The older type fuzes (M6A3, M6A4C, M10A3 and M200) were characterized by a "pop" when the striker hit the primer, and by a trail of sparks and smoke that followed the trajectory of the grenade. This gave away the position of the thrower, particularly in night fighting. To offset these disadvantages, the "T-lug" series of grenade fuzes was developed. These fuzes have a silent primer and a consolidated, special nongaseous delay element. Consequently, the "T-lug" fuzes are silent, smokeless and sparkless. The name "T-lug" is derived from a lug shaped like the figure "T,"

around which are hinged two extensions or fingers of the safety lever (Figure 3). Types of "T-lug" fuzes and their uses are:

1. M204A2 (M204A1), detonating fuze, used in M26 and Mark II fragmentation grenades.
2. M206A2 (M206A1), detonating fuze, used in offensive and white phosphorus grenades.
3. M205A2 (M205A1), igniting fuze, used in practice grenades.
4. M201A2 (M201A1), igniting fuze, used in chemical grenades (except WP and M25 tear gas).

All of these grenade fuzes (except the M201A1-A2) have an average time delay of 4.5 seconds. However, acceptance standards of the Ordnance Corps permit a small percentage of the fuzes to vary from a minimum of three seconds to a maximum of six seconds delay. The M201A2-A1 fuzes for the burning-type chemical hand grenades have a two-second average delay.

Rifle Grenades

Rifle grenades have long been a neglected and misused weapon, primarily because of misinterpretation and lack of information on their use. They are, however, the only antitank weapons of the rifle company other than the 3.5-inch rocket launchers. Not only are rifle grenades the antitank weapon of the rifle squad, they are also the squad's "mortar" for indirect firing at area targets.

Change 4 to FM 23-30, published in 1954, lists many of the new features in rifle grenades and associated equipment but already many of these developments are outmoded or obsolete.

For example, the M28 (ENERGA) HEAT rifle grenade has been declared obsolete and will be replaced by the M31 HEAT rifle grenade. The M28, while a very effective close-in antitank weapon, had deficiencies that made it unsuitable for use after storage for any length of time.

At this writing, final testing has not been completed on the M31 but early test results indicate that it is superior to the M28 in certain respects. It has greater accuracy and penetrates more armor. It is produced locally (the M28 was purchased from foreign concerns) and is one-third less expensive. The M31 has a body of thin steel and is fin-stabilized in flight. It has a point-initiating, base-detonating type fuze that is superior to the M28's fuze, particularly in obtaining impact detonation on soft earth.

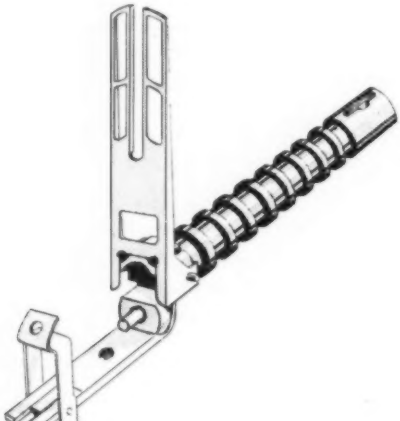


Figure 4. Test Model Sight Leaf

Sight Leafs

A sight leaf is under development for use with the M31. (A test model is shown in Figure 4.) This sight leaf, which is attached to the M7A3 grenade launcher, is designed for use only with the M31 grenade. Earlier models of sight leafs were tested for use with the M28 and M29 grenades but never were adopted, even though they were shown in Changes 2 and 4 to FM 23-30. In Change 2, the T-119 grenade launcher

and sight leaf are shown but these items were discarded after tests revealed deficiencies. A test model sight leaf for the M7A3 grenade launcher is shown in Change 4 but it, too, was not adopted as a standard item. Reports received at The Infantry School indicate that isolated units are using these items for training *but the items are not standard equipment.*

The M15 grenade sight is still the only standard sight for firing all types of rifle grenades but CONARC has recommended that it be eliminated from the supply system once the sight leaf has been adopted. If this is done, high-angle firing (over 25 degrees elevation, butt of the rifle on the ground) would be accomplished by using the marked-sling method outlined in paragraph 63, FM 23-30.

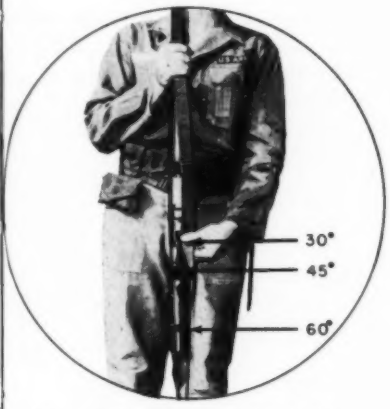


Figure 5. Field Expedient Method for Sling Marking

Not yet shown in a manual is a field-expedient method for marking the sling for high-angle firing. To do this, loosen the sling from the lower sling swivel, hold the sling tightly on the underside of the stock and mark the point where the sling touches the rear of the trigger guard (Figure 5). This is the 30-degree marking. For 45 degrees, the point is just behind the crook on the underside of the stock and the 60-degree marking is just below the lower sling swivel. The firing position employing the marked sling is shown in Figure 6.

Figure 6. Firing Position Using the Marked Sling

Grenade Launchers

At the present time, four models of grenade launchers are in the hands of troop units: the M7, M7A1, M7A2 and M7A3 (Figure 7). Of these, only the M7A3 is a standard item; all others are limited standard and will be replaced as soon as possible by the M7A3. It should be stressed that *it is prohibited to fire high explosive grenades from either the M7 or M7A1 grenade launchers.* Both of these launchers have circular-type grenade retainer springs (Figure 8) which are easily damaged and often fall off altogether, thus creating a safety hazard. The M7A2 and M7A3 launchers have the improved clip-type grenade retainer spring.

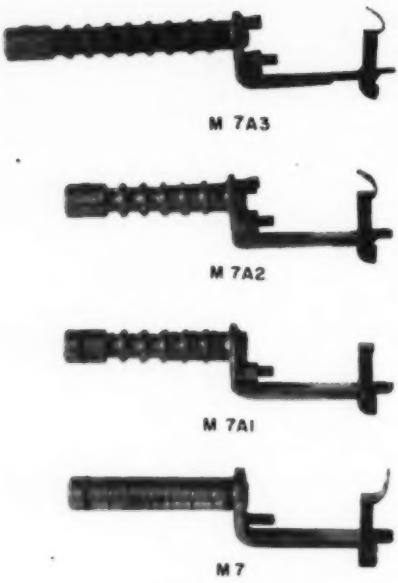


Figure 7. Rifle Grenade Launchers

The M3 grenade cartridge is now the *only* authorized cartridge for firing rifle grenades from the M1 rifle. The M7 auxiliary cartridge (commonly called the "Vitamin Pill") was declared obsolete in 1954. The M6 grenade cartridge, formerly used for firing grenades from the carbine, is no longer used for that purpose. In fact, *no grenades or pyrotechnic ground signals are to be fired from the carbine.* The M6 cartridge may be used, however, as an ordinary blank cartridge *for antiaircraft practice firing only.* Field expedients should not be used for propelling grenades from the rifle—use only the M3 grenade cartridge.

The M1A2 grenade projection adapter (Figure 9), which provides a stabilizer tube and fin assembly to convert the hand grenade into a "rifle grenade," may be used with either the M26 or Mark II fragmentation hand grenades. The same is true for the M1A1 adapter, an earlier model. The M1 adapter, now limited standard, was designed for use with the Mark II grenade *only. Do not attempt to fire the M26 grenade from the M1 adapter.*

Grenade Qualification Course

The grenade qualification course shown in Change 4 to FM 23-30 has been revised and awaits approval by CONARC. The qualifying scores have been reduced and the course made more realistic. Recommended changes in army training programs specify that all personnel of rifle and heavy weapons companies be qualified for record in hand and rifle grenades. In other units of the Infantry regiment, all personnel armed with the grenade launcher must be qualified for record. For a copy of the revised grenade qualification course (pending publication of the new FM 23-30), write to the Commandant, The Infantry School, Fort Benning, Georgia, Attn: Weapons Department.

Safety Precautions

Accidents involving the use of grenades have brought about new safety regulations. As a reminder, the latest precautions are:

1. *The same safety precautions involved in handling fragmentation hand grenades will be adhered to when using*

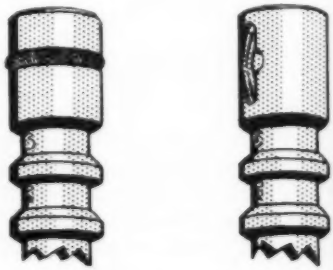


Figure 8. Grenade Retainer Springs

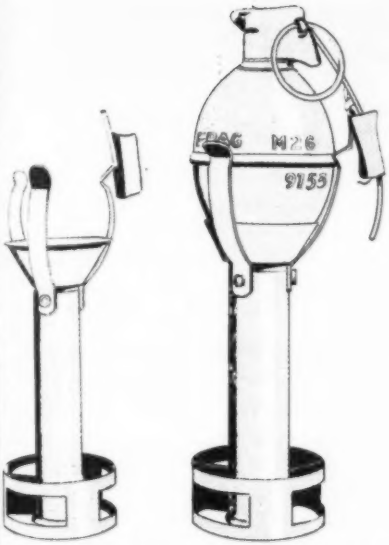


Figure 9. M1A2 Grenade Projection Adapter

the offensive hand grenades. Although the body of the offensive grenade is made of either pressed fiber or impregnated asphalt, lethal fragments are produced by the metal parts of the fuze assemblies and by the metal top and bottom on the Mark IIIA1.

2. *Once the safety pin of a grenade has been removed, the grenade must be thrown. No attempt will be made to replace the safety pin in the fuze of a grenade after it has been removed.*

3. When throwing live fragmentation hand grenades in training, assistant instructors will open the individual fiber containers before issue to students and will inspect them to assure that the grenades are packed with the fuze up and the safety pin in place. If, on opening the container, it is discovered that the grenade has been packed bottom up and the safety pin is not in place or visible, *no attempt should be made to remove the grenade from the container.* It should be turned over to Ordnance for proper disposal.

4. In training, fragmentation hand grenades will not be removed from the bottom half of individual containers until just before throwing. As each soldier is called upon to throw the grenade, he will remove the grenade from the bottom half of the container, being sure to slide his thumb over the safety lever before the lever clears the fiber container or the sleeve within the container. This will prevent accidents that might result from damaged safety pins or levers.

Pyrotechnics

The pyrotechnic ground signals and colored smoke rifle grenades fired from the grenade launcher are scheduled to be replaced entirely by a series of hand-held, rocket-propelled signals. These signals contain their own launching mechanism and may be fired without a rifle, grenade launcher and grenade cartridge. Included in this group of ground signals (numbered M125 through M130) are five-star clusters, parachute flares, smoke parachutes and colored smoke streamers.

The hand-held signals are issued in gray, waterproof containers (Figure 10)

Figure 10. Shipping Container

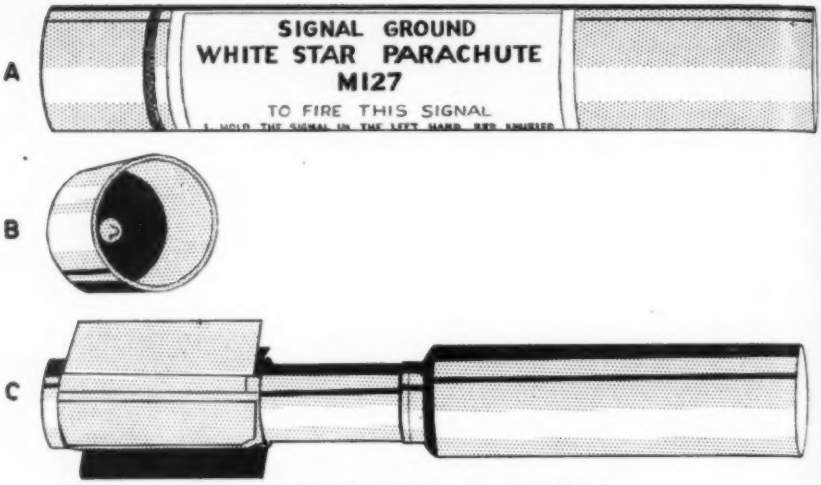


Figure 11. Hand-Held, Rocket-Propelled Signal
A. Rocket Barrel B. Firing Cap C. Signal Carrier

which may be discarded when the signal assembly is removed. The signal assembly has three main parts: the rocket barrel, signal carrier and the signal composition (Figure 11).

The rocket barrel contains the complete launching and signaling devices. At the base end of the rocket barrel is a percussion primer and at the top (ejection) end is a firing cap. Within this firing cap is a stationary firing pin which is alined with the percussion primer when the cap is removed from the top of the barrel and placed on the base.

The signal carrier contains the rocket propellant and signal composition. It has

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Figure 12. Firing the Hand-Held, Rocket-Propelled Signal

four flexible steel fins which unfold and stabilize the signal carrier in flight. The signal composition is the chemical or mixture of chemicals that produces a light or smoke upon burning.

To fire the signal, remove the firing cap from the top end of the rocket barrel and place it on the base end, up to the red line on the rocket barrel. Hold the rocket barrel at arm's length and at eye level at the desired angle and strike the firing cap with the palm of your free hand (Figure 12). The percussion primer is set off by this action and in turn it sets off an initiating charge which expels the signal carrier to a height of approximately 20 feet. At this point, the rocket propellant begins burning and rapidly propels the signal carrier to a minimum height of 650 feet, where the signal composition is expelled and begins burning. An exception is the colored smoke streamer which begins to emit a trail of colored smoke at 20 feet and gives off a continuous stream of colored smoke throughout the trajectory of the signal carrier.

This brings us up to the present. The future will bring new ideas and new developments in the never-ending search to provide our soldier with the best possible weapons — the same search that has brought us from the snakepot to our baseball grenade.

Here is an extremely valuable contribution to the solution of an age-old problem—how to give combat experience to young soldiers destined to enter combat for the first time. "Assault Battle Drill" is highly recommended by The Infantry School. *Available* at The Book Department, The Infantry School, Fort Benning, Ga.

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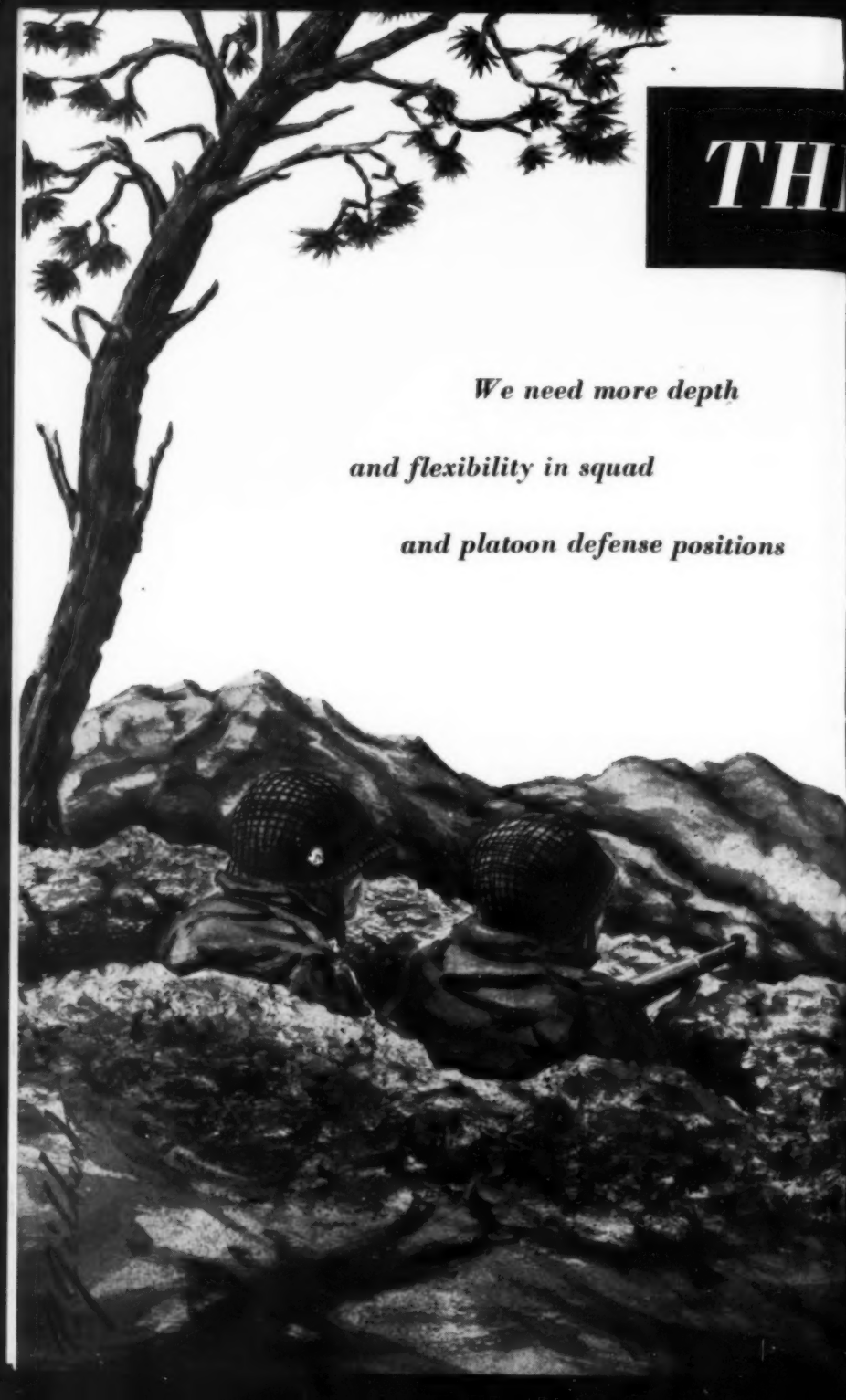

THE
We need more depth
and flexibility in squad
and platoon defense positions

LONG THIN LINE

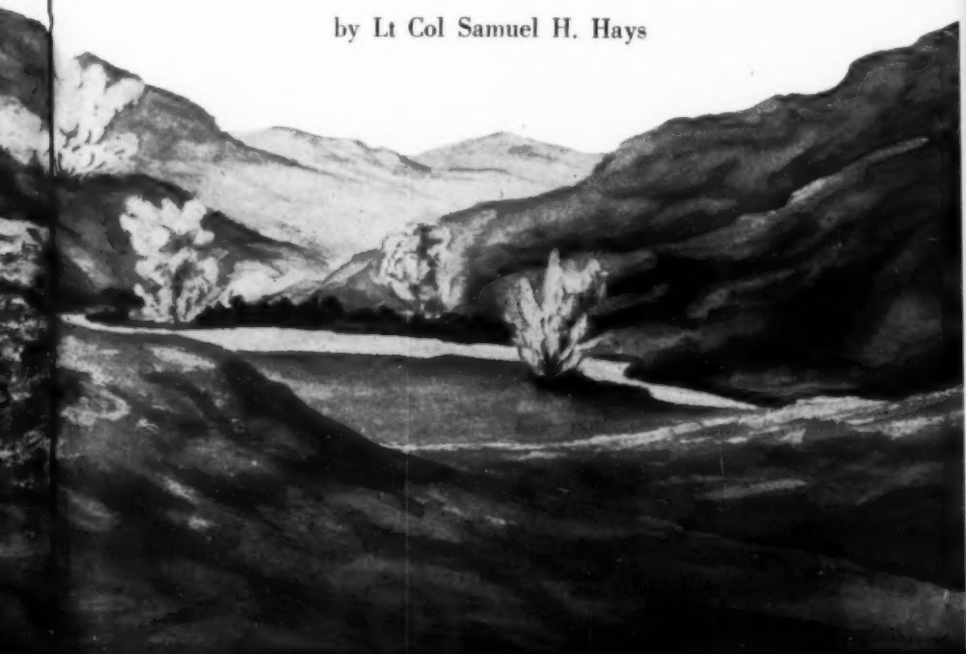
by Lt Col Samuel H. Hays

Pick up an M1 and crouch with me in a foxhole of a frontline rifle company in combat. Other members of our squad are deployed in a ragged line of one and two-man foxholes to our right and left. The nearest is some 15 yards away. As we peer cautiously over the parapet we see only some fresh spoil to our right to indicate the position of a friend. Our squad leader is somewhere to our left rear, out of sight behind some brush. The second squad of our platoon is to our left but we cannot see it. Nor can we see the third squad on the right.

Yesterday afternoon when we arrived on this defense position the lieutenant pointed out our sector — a front of some 600 yards. Like the others we dug our foxholes but before we could camouflage them or arrange for overhead cover we had to work on a wire detail, barely finishing by daylight this morning.

As we squat on the fire step fatigued and sleepy, our squad leader crawls up to say that we are about to be attacked. Friendly artillery shells rustle out overhead bursting in geysers of dirt on the far side of the valley. Sudden explosions, first in front and then behind us, scatter dirt and bits of shrapnel around, making our hasty shelters seem most inadequate. We hope they won't try air bursts.

We see nothing to our front but bushes and the empty valley floor, sprouting



puffs of smoke and dust here and there. Soon the ceaseless racket begins to change its tone. The sharp crump of exploding projectiles is no longer preceded by a warning whistle. This means mortar fire is coming in. We wish we had some overhead cover. Suddenly, small-arms fire kicks up dust in front of us and sends ricochets screaming overhead. We look out to see if they are coming. There is more of our own artillery going out. A machinegun rattles off to our left. Should we fire? There are some figures coming through our wire. How many? Which one shall I aim at? We take aim. Squeeze the trigger, fire! Fire again! We soon lose count of the shots. Change one clip and then another. Wonder what those guys in the next hole are doing? We can't hear a thing but noise. Here they come! Give me a hand grenade! Duck! The machinegun to our right stops. Wish we had some help. What is that yelling and firing behind us? And so we defend our rifle company's position.

Organization of key terrain, organization in depth, mutual support, barrier plans, all-around defense, coordinated fire plan, coordinated antitank defense, flexibility — these are fine-sounding phrases and essential. But they are not one whit stronger than the isolated squads of riflemen manning the front-line foxholes.

With all our planning and coordination do we give those front-line squads the best possible conditions for stopping the enemy? Do we properly instruct these squads in the selection and preparation of positions from which they can defend adequately?

How often have you as an Infantry commander or staff officer walked along the front line of your unit in defense, analyzing the effectiveness of positions and questioning individuals on their missions, duties and plans? Most of you have done so many times. If you have not done it recently, make a point of it the next time your unit runs a problem in the defense. See if you do not agree that the positions occupied by our rifle squads and front-line crew-served weapons are too frequently a far cry from the effective, well-integrated positions visualized in our instruction. Then review our defensive experiences in World War II and Korea: men not firing, positions

overrun, crew-served weapons staying in action longer than riflemen, lack of fire control, isolation. How have we adapted our teaching to the harsh realities of experience?

We all realize that defensive problems of the rifle company have greatly increased over the past 10 years. There are more weapons to control and coordinate and greater offensive power to defend against. The frontage a company is expected to defend is long — and getting longer. Lucky is the company commander who is assigned a front of only 1200 yards. More likely he will be faced with 1500 yards or more.

The sheer mechanical labor needed to prepare even a hasty defense has increased in more than just frontages. The VT fuze spells out the urgency for overhead cover. The threat of enemy tanks requires the laying of mine fields. The numerical superiority of the enemy emphasizes the need for antipersonnel mines and wire obstacles. All of these requirements are laborious, time-consuming operations which make it increasingly difficult to find time to construct those alternate and supplementary positions called for by our defensive doctrine. Control becomes increasingly vital and difficult under the forced dispersion of extended frontages.

Faced with a wide front, the company commander is seriously tempted to place all three platoons on line, leaving the problems of depth and flexibility to the battalion commander. If he succumbs to this temptation, as all too many do, he instantly deprives himself of control. On the other hand he may occupy a company perimeter or put two platoons on line and the third in position to the rear. The perimeter may work in many instances. However, lacking the element of mutual support between companies, its adoption will require a decision of the battalion commander. The two-platoon-front formation, frequently employed in training, passes the problem of the wide front down to the platoon leader.

Looking at a front of 600 yards or greater the platoon leader faces the same problem and temptations his company commander had. This usually leads to the solution of the three squads on line, spread to cover his area. Even if he had a full platoon — which he rarely will have — and placed everyone on line in one-man foxholes, his men will be at least 15 yards apart. In any event his control is tenuous, his depth negligible and the reliability of his defensive position subject to doubt. He is not supposed to do this, you say. But he does do it and you have seen it.

What does our squad leader do? Faced with 200 yards of front to cover he tries to spread his eight men out to cover the area, further eliminating depth, flexibility and control.

It is easy to see how our individual rifleman finds himself in the somewhat isolated and precarious position previously described. His squad leader and assistant squad leader are out of sight and, during firing, may be out of hearing. During hours of darkness he feels alone and isolated, subject to all the terrors and mental confusion that night combat can bring. Would you like to be in his shoes?

What happens to this isolated rifleman? He has been known to bolt to the rear, thinking all is lost. He frequently fails to fire at an attacking enemy, fearing to expose himself and draw fire. He sometimes fires haphazardly at night when startled by noises to his front, wind in the trees, wild animals or friendly patrols. We can attribute many small-unit combat failures to the isolation of the individual on the battlefield.

Visualize what this means as you walk along the front — a long, thin line of riflemen extending from one flank of the

company to the other with their weapons sighted generally perpendicular to the front, machineguns occupying front-line positions with riflemen, even 57mm recoilless rifles and rocket launchers in the front. There is neither depth nor flexibility at platoon level. All-around defense is given lip service by designating positions to the rear, occasionally staked, rarely dug, which would be occupied if the enemy attacked from that direction.

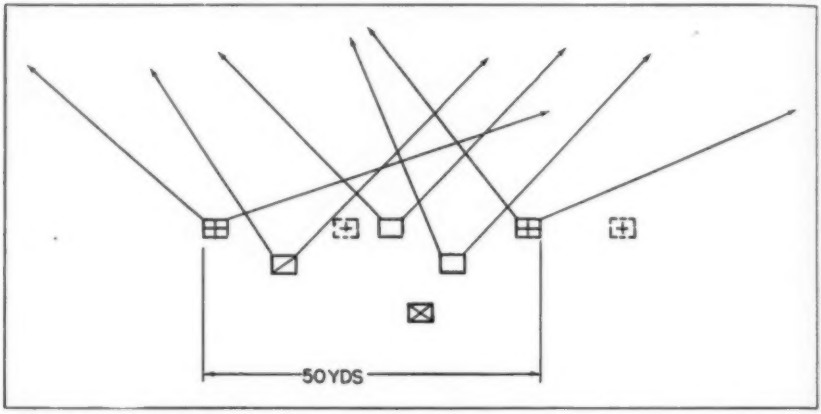


Figure 1.
Squad Defensive Position

Making allowances for some deliberate exaggeration, isn't this a fair picture of a normal defense?

This long, thin defense results from our current doctrine and how we teach it — not from a real understanding of our men. We are all familiar with the squad position as we teach it. But just to refresh our memories let's look at this sketch from FM 7-10.

Even with ideal frontages and a full squad of nine men it's a pretty thin line. But when we are faced with extended frontages and understrength squads it is not hard to visualize the result. No wonder our men feel isolated and alone.

The platoon position we teach — with three squads generally abreast — merely extends this weak line. It permits the enemy skirmish line to hit the entire platoon simultaneously. If a squad, or even three or four men, gives way, the platoon position is seriously compromised. Where are our depth, flexibility and control? The all-around defense provided by the dotted alternate and supplementary positions too frequently will be doomed to exist only in the plans of the platoon leader and on the sketch he submits to his company commander.

How about the perimeter defense? Today we are told to stress it in our training. This position is designed for the wide-front problems we have been considering. Here, too, if the squads on the perimeter dispose themselves in a roughly circular line around the circumference as they frequently do, the position

is liable to prove equally vulnerable. The manual says that each rifle platoon leader normally organizes his sector by placing three rifle squads abreast and that foxholes are dug 5 to 20 yards apart. Disregarding the inner company perimeter, how does this differ from what we have already said about the squad and the platoon in a linear defense? We are depending on a thin line of men located at some distance from each other.

Here, then, is our problem. Although we say we want our defensive positions to provide depth, flexibility and all-around defense, we do not show our squads and platoons that we really mean it. In spite of all the talk about the possible use of mass-destruction weapons, and increased battlefield dispersion, the hard realities of group psychology, means of control and basic defensive requirements prevent further expansion of the frontages held by squads and platoons. How can we teach our platoons to get maximum effectiveness from the defense?

Any solution to the problems of positioning small units in the defense should encompass several considerations. The entire rifle platoon should not be subjected to assault by an enemy skirmish line at the same time. The men in the most forward positions who must first absorb the assault should be covered by small-arms fire from the rear. The members of a rifle squad should be positioned close enough together to develop that team psychology characteristic of weapons crews.

Regardless of the frontage assigned, squads and platoons must be within effective control of their leaders. Perimeter-defense formations should be considered when the assigned frontage is too great for front-line companies to support each other by fire. Crew-served weapons, particularly machineguns, should wherever possible be located behind front-line riflemen to remain in action as long as possible.

When we apply these ideas to a squad position we come up with a cluster-type defensive formation. Although not prescribed by our manuals, this formation has been employed successfully in training and in combat. The squad leader places his squad members around him in a cluster or rough ellipse and assigns each man primary and supplementary sectors of fire as shown in Figure 2.

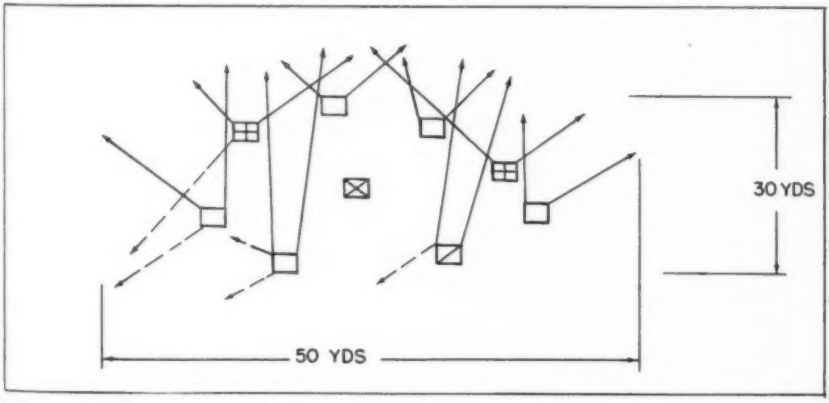


Figure 2.
Squad Cluster Defensive Position

The squad cluster couples maximum dispersion with maximum control and opportunities for teamwork. It minimizes the feeling of isolation by pulling the squad closer together, giving the forward men the reassuring knowledge that they have friendly support from the rear and the rear men the security of knowing they have friends just in front of them.

This position permits continuous rifle fire against any assault. Supporting fire from the rear holds the enemy away from the forward positions, allowing them to fire longer. It has the additional advantage of permitting more flexible use of fire by providing supplementary sectors of fire to the flanks and rear, providing all-around defense while maintaining the possibility of maximum fire to the front.

The cluster is best adapted to a position on a forward slope steep enough to permit the men in the rear to fire over the heads of the men in front of them. Even in relatively flat terrain, however, adequate paradoses and overhead cover, together with careful assignment of sectors of fire between the forward foxholes, make this formation entirely practicable. As in any other defensive formation it should be considered as a starting point which the squad leader must modify to fit the ground he occupies.

If the principles of mutually supporting firepower, defense in depth, flexibility and fire control are applied at squad level, the job of higher commanders in applying these principles becomes progressively easier. Projecting these principles to platoon level, the platoon position becomes a group of three squad clusters. Crew-served weapons and platoon headquarters are attached to the squads. This platoon position might look something like Figure 3.

Note the position of the light machine-gun teams to the rear of the rifle squads where they would be protected from the assaulting enemy yet still be able to fire across the front of the platoon. The rocket-launcher team is kept in the vicinity of the platoon leader. Unless there is

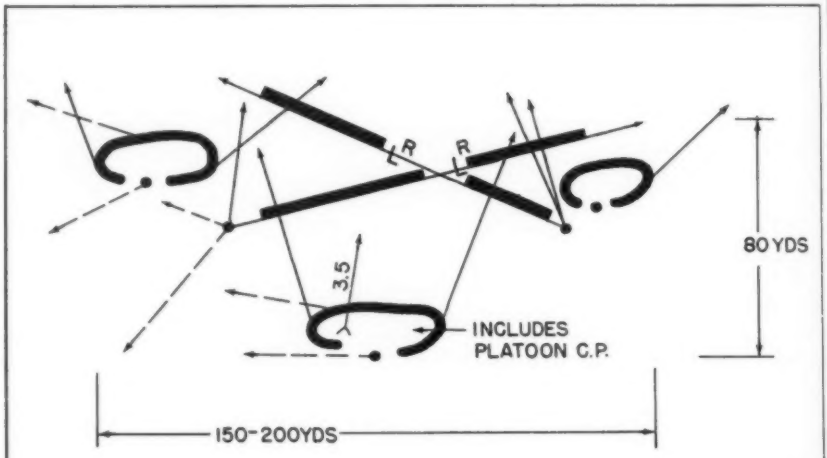


Figure 3. Platoon Vee Defensive Position

either a natural or artificial tank obstacle to the front, that "most likely avenue of tank approach" is a meaningless phrase to the Infantry platoon. Tanks can approach from almost anywhere and the rocket launcher can be employed most effectively when controlled by the platoon leader as his platoon artillery piece.

Using this formation the platoon still can place maximum fires to its front. It has depth within the platoon position which makes it more difficult to overrun. It would be able to hold its position if an adjacent squad were overrun or neutralized by fire. The rear squad can fire either to the front, flanks or to the rear and can support the forward squads. The platoon can defend its position from any direction with no change in the position of the riflemen. A minimum of supplementary positions would have to be prepared for crew-served weapons.

This formation, like any other, must be adapted to the defensive terrain. In a platoon position on a nose, one squad could be placed forward and two to the flanks and rear. Similarly, the platoon could be echeloned to the right or left. This formation or a modification of it should bring the squad leaders within effective controlling distance of the platoon leader, contributing to his sense of security and the effectiveness with which he can defend his position.

Perhaps the greatest advantage of the squad cluster and platoon defensive vee formations is that they carry out the basic requirements and principles of defense at the lowest levels. While the tendency to spread individuals and squads across the entire sector will still exist, instruction in individual positions in depth would do much to discourage the practice and give the squad and platoon leaders a guide for selecting a position.

It should be repeated that any defensive position must be adapted to the terrain and conditions in which the defense is assumed. Positions in rolling terrain obviously will differ from those in mountains or jungles. Enemy action and tactical methods will dictate modifications of basic formations. Developments in Korea pointed toward the use of elaborate bunkers and trench systems as the length of time on the defensive position increased. The squad cluster formation can easily be adapted to this requirement. Instead of linear trenches with periodic bunkers, each system of individual foxholes or fighting positions could be

linked by communication trenches to a central squad bunker, making each squad position a small defensive island connected to other squads by communication trenches. In addition to the tactical wire along the final protective lines of the machineguns, protective wire should be placed entirely around the squad position.

To obtain the greatest possible effectiveness from our front-line rifle squads and platoons we must provide the most favorable conditions for their employment. I believe that current training doctrine fails to emphasize depth, flexibility and control in squad and platoon defensive positions. On normal wide frontages, this leads to extended linear defensive positions which lack adequate strength. Studies on the combat effectiveness of Infantry units in the defense as well as observation of current training practice point to the need of a new approach to the instruction of small units in the defense. The adoption of the following rules would go far toward integrating and tightening defensive procedure and aid squad and platoon leaders in selecting effective positions:

1. The members of a rifle squad usually will be placed in a cluster around the squad leader in a primary position which provides depth, control and all-around defense.

2. The three squads of the rifle platoon usually will be placed in depth to provide all-around defense together with maximum fire to the front and flanks from their primary positions.

3. Members of the rifle squad normally will not be separated beyond the control of the squad leader.

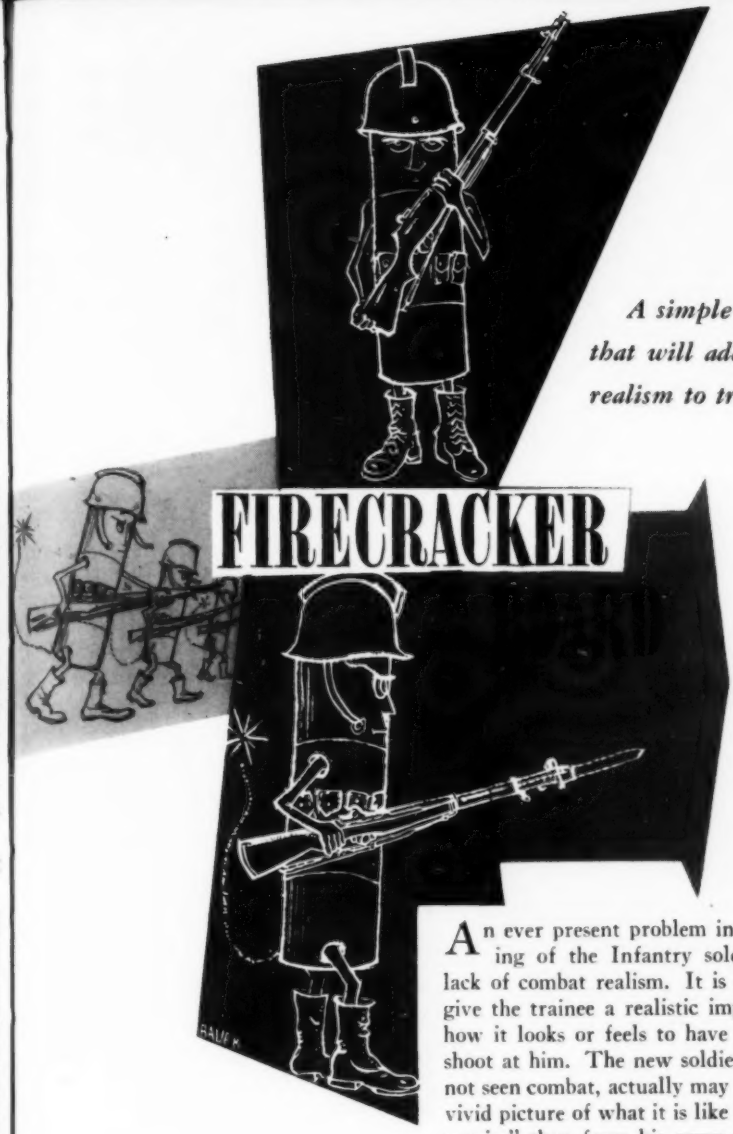
4. Squads of a rifle platoon normally will not be separated beyond the effective control of the platoon leader.

5. Perimeter defense will be employed when front-line elements are beyond effective fire-supporting range of each other. The wider the front the larger will be the unit forming the perimeter.

6. Crew-served weapons, particularly machineguns, should be sheltered in positions behind front-line rifle squads wherever possible.

Let's do something about that long thin line.

Lt Col Samuel H. Hays began his military career when he enlisted in the army in 1934 and received his commission upon graduation from the United States Military Academy in 1942. After completing courses at The Infantry School and the Command and General Staff College, he served as Assistant G3, 94th Division, with the Allied Mission to Greece and as G3, 39th Infantry. Returning to the United States, he became an instructor in social science at the United States Military Academy and received a master's degree in political science from Columbia University. After serving as S3 and Battalion Commander, 26th Infantry Regiment, Colonel Hays was appointed to his present position, PMS&T at Montana State University.



A simple device that will add more realism to training.

FIRECRACKER

By Capt Barney K. Neal, Jr.

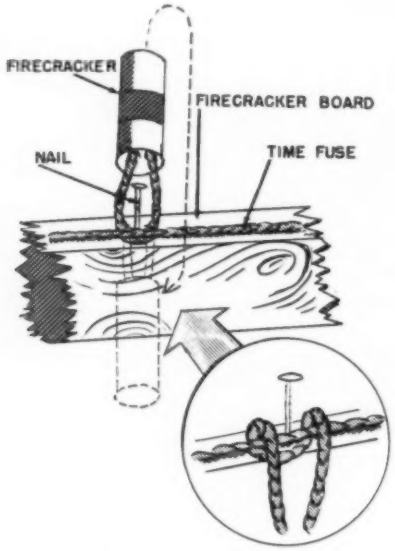
An ever present problem in the training of the Infantry soldier is the lack of combat realism. It is difficult to give the trainee a realistic impression of how it looks or feels to have the enemy shoot at him. The new soldier, who has not seen combat, actually may get a more vivid picture of what it is like from "war movies" than from his army training.

Hollywood, at considerable expense, creates a somewhat exaggerated realism. It does this through the psychological effect of both sound and visual action. The effect is complete with ricochets, flying debris and falling bodies. But cost alone is enough to prevent us from using movie techniques.

We use blank rounds and simulators in our combat training, but even these are too expensive for wide use. We also employ troops as aggressor forces, but only when our trainees are not firing live ammunition.

What the army needs is a safe, economical, time-conserving device that can be used to add realism to any training problem. Such a device is an easily constructed training aid — the firecracker board.

The inexpensive firecracker, more technically known as the two-inch salute, produces smoke, flash and noise which, at 200 yards, approximate the characteristics of small arms fire. When properly attached to a firecracker board with fuses of varying lengths, these firecrackers give the impression of enemy rifle fire. The firecrackers are attached to the board as shown in Figure 1. They can be spaced to provide rapid fire that gradually slows down and ultimately stops as the trainee shoots at the imaginary enemy. The boards, which may be constructed from salvage or scrap lumber, are light, easily transported and simple to construct.



After nails have been driven into the edge of the firecracker board at proper intervals to give the desired rate of fire, one firecracker is hung on each nail. The time fuse is then strung along the top edge of the board, close to the nails but along the side away from the firecracker. A few staples should be used to hold the time fuse in place. The firecrackers are then flipped over to the other side of the board so that the firecracker fuse wraps over the time fuse to insure contact.

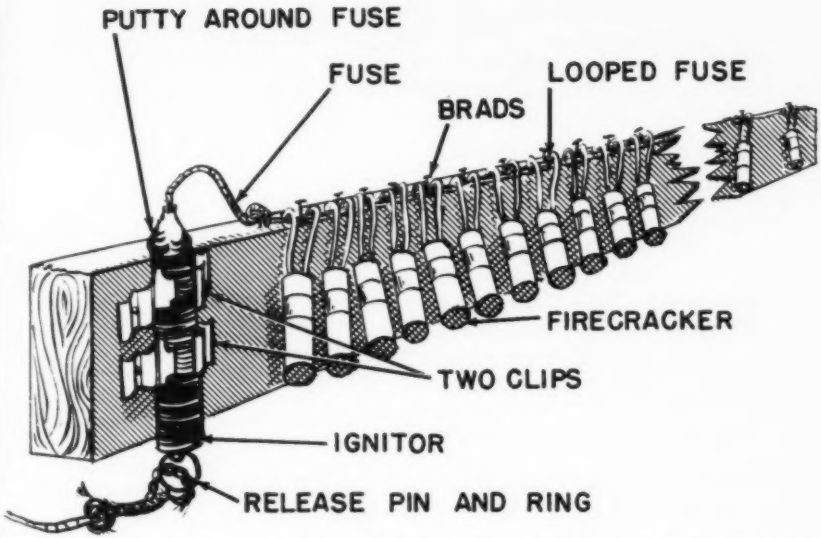
Figure 1.

Firecracker boards were originally developed at Fort Benning in 1954 by a group of civilian scientists and members of The Infantry School's Weapons Department. Psychological Research Associates used the boards successfully in tests at Fort Lewis, Washington, and have continued to use this method to simulate fire in all the tests they have conducted to date.

To construct this simple training aid, first string the firecrackers and fuses together on the boards in the quantities and at intervals to give the effect desired. Place them close together for rapid fire; farther apart for slow fire. Then attach the fuse ignition equipment (Figure 2). With a little practice, you can string a two-minute firing board in approximately two minutes.

Raise the firecracker boards off the ground about two feet (Figure 3). They may vary in length according to the desired firing time. Approximately 30 to 40 firecrackers are required to make a two-minute board. However, you can string any number of firecrackers on a single board. Usually, one board will represent three or four riflemen in a position. Scattered around an objective, the boards appear to be defenders fighting a last-ditch stand.

Here is how the firecracker board functions: when the time fuse is ignited,



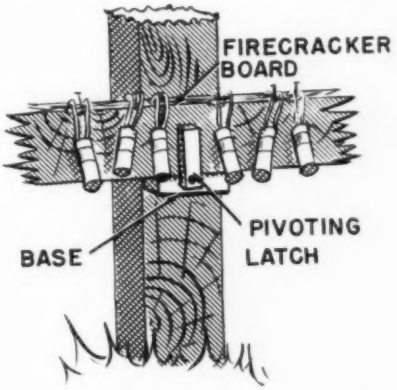
Nails are driven into the top edge of the firecracker board, close together for rapid fire, then gradually spaced farther apart to reduce the rate of fire. The firecrackers and time fuse are then strung and the ignitor is attached as shown.

Figure 2.

it burns until it reaches and lights the firecracker fuse. The firecracker's weight pulls the burning fuse off the nail and the lit firecracker falls to the ground and explodes.

A pull-type ignitor can be used to start the time fuse. If the operator pulls the fuse manually and is exposed to fire, he must be located in a pit. By using a common pull rope, one operator can pull the ignitors on three or four boards. The problem of pulling the fuses is simplified if you use firecracker boards on a range that is equipped with an electric wiring system. Electric squibs, available through regular supply channels, are an excellent means for igniting the time fuses.

Firecracker boards are relatively inexpensive. Regular two-inch salutes cost approximately one-fourth of a cent each and one-eighth-inch diameter time fuse



A stake with an attached base for the firecracker board should be driven into the ground. A narrow, pivoting wood or metal latch will hold the board in place.

Figure 3.

costs one cent a foot. Approximately 20 to 22 inches of fuse are required to make a two-minute firing board. The total cost of firing these two-minute boards nine times a day is about ten dollars. This is considerably less expensive than simulators which cost forty-two cents apiece or blank rounds which cost five cents apiece.

In addition to being simple and inexpensive, the firecracker board is weather resistant. E-type silhouettes, creased down the center and placed on top of the boards, will protect the lit fuse from rain. When the firecracker begins to burn, average rainfall will not extinguish it. The time fuse is not affected by rain because it is waterproof.

The firecracker board can be used to add realism to a large number of problems now being conducted to train our riflemen. Try it in your own unit. You will find that this simple device will help to arouse more interest in training and better prepare your unit for combat.

CAPT BARNEY K. NEAL, JR received his commission in 1950 at Oklahoma A&M and then became training officer in the 10th Infantry Division at Fort Riley, Kansas. In Korea, he served a year as a platoon leader in the 27th Infantry Regiment. Upon returning to the United States, Capt Neal was stationed at Fort Benning where he served as a tactical officer in the Officer Candidate Regiment and later as an instructor in the Weapons Department. He is now attending the Advanced Course at Fort Benning.

A MAN OF MANY IDEAS

Leonardo Da Vinci was a man of many ideas. They didn't always work, but he never stopped trying. Send your article or ideas to the ISQ. If they're good, we'll buy them; if they're not, we'll tell you why. Write: Editor, The Infantry School Quarterly, Publications & Visual Aids Office, The Infantry School, Fort Benning, Georgia.

The following information provides means of keeping up to date on matters of professional interest.

APPROVED

Changes in Doctrine and Employment of the 81mm Mortar Platoon.

The revision of TOE 7-18, Heavy Weapons Company, Infantry Regiment, in February 1955 has necessitated some important changes in doctrine and techniques of employment for the 81mm mortar platoon. Here is the background on these changes.

The 81mm mortar platoon now has a third section of weapons. Three forward observers are included in the platoon headquarters(the old TOE authorized one). A new round of ammunition (M362), which has a maximum range capability of 4200 yards and a minimum of 200 yards, has been accepted as standard. (It is not currently available for issue.)

General support, direct support and attachment are still appropriate methods of utilization for the reorganized 81mm mortar platoon. The following two capabilities, however, illustrate ways in which the platoon's effectiveness has been increased.

Flexibility of fire available to the battalion commander has been increased because the main attack or the critical defense effort can now be weighted with a second section of mortars. This is particularly true when a method other than general support is used. In addition, the platoon is now more adaptable for mobile defense, perimeter defense, and defense with little or no depth.

Displacement can be accomplished in one, two or three echelons, depending upon the requirements for fire and the time available. The method selected must provide continuity of fire support as required by the battalion commander's plan of action.

Displacement in three echelons, one section at a time, provides the advantage of always having two sections in position to fire. To insure continuity of fire control, the fire direction center is split into two sections, one to go forward with the first section that displaces and one to go with the last section to displace. The disadvantage of this method is the increased length of time required to displace.

To displace in two echelons, one of the following techniques will be used:

One section displaces to a new firing position while the other two remain in position to deliver fire support. As soon as the first section displaces and is in position ready to fire, the remaining two sections displace.

Another technique is to displace two sections to a new firing position while the remaining section continues to fire. As soon as the two sections are in position ready to fire, the remaining section displaces. As with the three echelon method, the FDC will be split.

The platoon will not displace as a unit unless the range limits of the 81mm mortar have been exceeded such as during a pursuit, or when hostile resistance has collapsed.

Communications are a problem when displacing in two or three echelons. The TOE provides the platoon with five AN/PRC 10 radios. One of these is allotted to each of the three forward observers; one is given to the FDC and one, to the platoon leader. When the forward observers are operating with the

three rifle companies of the battalion it will be necessary during displacement for the platoon leader to employ his radio in the fire request net with one echelon of the platoon FDC. An alternate solution is to secure an additional AN/PRC 10 radio from the battalion headquarters company. Since the forward observer parties may lay their own wire, the use of wire between forward observers and either echelon of the FDC, though desirable, will seldom be practical in offensive situations.

Section barrages are desirable for fire density, lethality and continuity of fire. If one mortar is neutralized, the other gunner can continue to cover the barrage area by traversing his mortar. If the number of approaches require it, sections may be split, but this is less desirable.

The size of the section barrage will be 100 yards in width and 100 yards in depth. Mortars within the section are currently emplaced 30 yards apart. By opening the sheaf of the section to 50 yards, a section barrage 100 yards in width and 100 yards in depth can be executed.

The forward observers should be allocated to each rifle company whether the company is attacking, on the front-line in defense or in reserve. If additional observation posts must be established, squad leaders or other qualified personnel within the platoon can be used, if the necessary communication equipment can be secured.

REVISED

Court-Martial Jurisdiction Ends with Discharge.

The United States Supreme Court declared Article 3(a) of the Uniform Code of Military Justice unconstitutional on 7 December 1955. This article provided that one, who while in service committed an offense punishable by confinement of five years or more, for which he could not be tried in the courts of the United States, could be tried by courts-martial notwithstanding his discharge from service. The effect of the ruling is that court-martial jurisdiction is terminated by discharge.

Field-graders May Volunteer for Ranger Training.

Ranger training has been opened to all army personnel who volunteer and can meet the necessary prerequisites.

Lieutenant colonels, majors, company grade officers and enlisted men in grade E4 or above assigned within the ZI may volunteer for this training. Exceptions are replacement-stream personnel, individuals under court-martial charges and those slated for overseas duty. Men desiring to volunteer for Ranger training may submit a written application through channels.

Some of the prerequisites as listed in DA Circular 621-12 and in CONARC letter "Change in Prerequisites for the Ranger Course," dated 28 Nov 195[illegible] include: Field-grade officers must not have reached age 40 when they submit their application; all others must not have reached age 33. All volunteers must attain a total score of 200 points on the army physical fitness test (Chapter 1[illegible] Table III, FM 21-20) within 30 days before submitting their application.

When they arrive at Fort Benning, Ranger applicants are tested again on their physical conditioning. They not only must score 200 points but must also perform a minimum number of repetitions in each event of the test.

Among these requirements are:

pullups—	3 repetitions
squat jumps—	20 repetitions
pushups—	15 repetitions
2-minute situps—	25 repetitions

In addition, prospective Rangers must complete the half-mile run in four minutes or less with rifle and full field equipment and swim 50 feet stripped, no

against time. If they fail to meet Ranger physical prerequisites, they are not enrolled in the course and are returned to their units.

New Stock Number for Headspace and Timing Gages.

Headspace and timing gages for the .30-caliber and .50-caliber machineguns have been assigned new stock numbers. They are shown in current ORD 8 (SNL J 12) as follows:

.30-caliber - JO12 - 7319928
.50-caliber - JO12 - 5351212.

Headspace and timing gages for the .30-caliber machinegun belong only in the hands of Ordnance inspection teams. They may not be issued to troop units. Gages for the .50-caliber machinegun are issued on the basis of one per machinegun (ORD 7 (SNL A39)). Headspace and timing gages are imperative for safe and efficient firing of the .50-caliber machinegun.

New and Discontinued Courses.

A two-week Infantry Officer Refresher Course for active-duty and reserve-component officers in the grades of captain through colonel has replaced all previous refresher courses at The Infantry School.

The Infantry Heavy Mortar Officer Course and the Infantry Operations, Intelligence and Reconnaissance Course have been discontinued.

TRAINING AIDS

Small Plastic Models of Weapons.

The Weapons Department, The Infantry School, has been conducting mechanical training in various small arms by using small-scale plastic working models in conjunction with a vu-graph for classroom presentations instead of bulky wooden working models previously used.

Recoilless Rifle Subcaliber Device Modified.

The subcaliber device for the 57mm recoilless rifle has been modified to increase its stability within the reaction chamber. (See Paragraph 64, FM 23-80, October 1952 and Change 1, February 1954, for description of subcaliber device.) Three studs, one of which is adjustable, have been placed at the base of the cartridge case. These studs prevent the device from moving while the rifle is being loaded and unloaded and insure maintenance of a positive zero.

New Rest for .30-caliber Carbine.

Third Army Training Aids Center, Fort Benning, Georgia, has developed and is producing a new, wooden rest for the .30-caliber carbine. The rest breaks down into 5 parts and features 3-point ground contact which increases stability. The front of the rest contains a U-shaped slit and the back a V-shaped slit. This training aid is designed to be used for triangulation exercises with the carbine in preparatory marksmanship.

New Counterfire Training Aid.

The Infantry School's Communications Department has developed a training aid for teaching operators for the Recorder BC-1323A of Sound Locating Set GR-6A.

The training aid places the cathode-ray tube in a box outside of the Recorder BC-1323A where both instructor and students can view and discuss the sound wave patterns at the same time. Formerly, only one person could view patterns on the cathode-ray tube and it was impossible for the instructor to show or explain to a student how to identify and adjust patterns with any degree of accuracy.

For more information and sketches showing how this training aid can be constructed by qualified radio mechanics using salvaged cord and parts usually found around a radio repair shop, write: The Commandant, The Infantry School, Fort Benning, Georgia, Attn: Publications and Visual Aids Office.

PUBLICATIONS

Released.

Department of the Army has released three new TMs to replace outdated versions. The new manuals are TM 9-8022 (superseding TM 9-819, January 1952, on the 2½-ton M34 and M35), TM 9-8030 (superseding TM 9-840, December 1950, on the ¾-ton M37) and TM 9-8014 (superseding TM 9-804-A, June 1952, on the ¼-ton M38A1). Some of these publications are scarce in certain areas, but it is anticipated that they will be available in quantity within the near future.

Revised.

TM 9-2700, November 1947, "Principles of Automotive Vehicles," is presently undergoing a major revision. The improved version of the military instructor's "bible" will be designated TM 9-8000, and will be considerably expanded to provide more complete coverage of the theories behind the new features which are being adapted by the army for use in military vehicles.

Special Text 57-35-2.

"Army Transport Aviation—Combat Operations," is now being printed at The Infantry School and may be ordered from the Book Department, Fort Benning, Georgia, for $1.00 a copy. This text, which will appear later as a field manual, provides basic information concerning the administration, tactical planning and conduct of army operations employing army transport aircraft from regimental level down to and including small reconnaissance patrols.

Military Management Problem Data Available.

A new Infantry School advance sheet on Problems 6467/6468, "Military Management," is available to instructors upon request. This information is designed to familiarize students with the command and staff responsibilities for the application of management principles and techniques; the functions of t comptroller, the Army Program Syste the Army Management Improveme Program and the application of prop control of material in the Infantry reg ment. The advance sheet compares U. resources in men and material with tho of other countries, including Russia. also traces the origin of comptrollersh in business and the armed forces and ou lines a suggested method of applyin the functions of comptrollership to th operations of the Infantry regimen This problem data may be obtained wit out cost by writing to The Infantr School, Fort Benning, Georgia, Attn Publications and Visual Aids Office.

TRAINING FILMS

The following new, Class II trainin films should now be available at film ex changes. Their average running time approximately five minutes.

1. *Barrel Packing, Heavy Machin gun,* TF 7-2204. This film shows how t pack the heavy machinegun barrel, bo front and rear.

2. *Field Zeroing the Light Machin Gun on Bipod,* TF 7-2230. The metho of sight manipulation necessary for mak ing the line of aim coincide with th strike of the bullet is demonstrated i this film.

3. *Measuring Horizontal Angle Light Machinegun,* TF 7-2231. Thi film shows the method of measurin angles, recording data and applying dat to the gun to hit a target during period of poor visibility.

4. *Zeroing the Light Machinegun o Tripod on the 500-inch Range,* TF 7 2232. This film explains how to zero th gun using a 500-inch range target.

5. *Auxiliary Aiming Points,* TF 7 2233. The method of employing auxili ary aiming points for firing the heav machinegun at an obscured target demonstrated in this film.